DOCUMENT RESUME

ED 362 917 CS 508 351

TITLE	Proceedings of the Annual Meeting of the Association for Education in Journalism and Mass Communication (76th, Kansas City, Missouri, August 11-14, 1993). Part V: Media and Technology.
INSTITUTION	Association for Education in Journalism and Mass Communication.
PUB DATE	Aug 93
NOTE	397p.; For other sections of these proceedings, see CS 508 347-362. For 1992 proceedings, see ED 349 608-623.
PUB TYPE	Collected Works - Conference Proceedings (021)
EDRS PRICE	MF01/PC16 Plus Postage.
DESCRIPTORS	Communication Research; Computer Literacy; Computers; Constitutional Law; Copyrights; Disabilities; Electronic Mail; Federal Regulation; Films; *Mass Media; Media Research; Photojournalism; *Technology
IDENTIFIERS	Audiotex; Digital Imagery; Federal Communications Commission; High Definition Television; Journalists; *Technological Change

ABSTRACT

The Media and Technology section of this collection of conference presentations contains the following 13 papers: "The 'Talking Newspaper': The Technical Virtuosity and Monologic Modality of Audiotex(t)" (George Albert Gladney); "An Historic Opportunity?: Communication Research in the Design of Communication Interfaces and Systems" (Frank Biocca); "Moral Rights, New Technology, and Motion Pictures: A Dualistic Policy Proposal" (David J. Schaefer); "Computer Literacy, Technology Use and Compact Disc-Interactive: An Exploratory Study" (David Kamerer and Barton K. Wilcox); "Telecommunications Regulation: From Natural Monopoly to Open Network Architecture" (William J. Leonhirth); "Constitutional and Common Law Informational Privacy: Proposing a 'Reasonable Needs' Approach for New Technologies" (Laurie Thomas Lee); "The Use of Key-Capture and Pausal Methodology to Examine the Individual Journalistic Ethical Decision-Making Process" (Terri Catlett and Byron T. Scott); "'Colorizing' HDTV: Is Consumer Adoption of Color Television an Appropriate Comparison for Acceptance of High-Definition Television?" (Nancy C. Cornwell and others); "Fight for the Future: Congress, the Brooks Bill and the Baby Bells" (Jane B. Singer); "The Diffusion of Information on Assistive Technology Internationally to People with Disabilities" (Michael R. Smith); "The Effects of Specific Knowledge of Digital Image Manipulation Capabilities and Newspaper Context on the Believability of News Photographs" (James D. Kelly and Diona Nace); "Patterns of Computer Use in Newspaper Newsrooms: A National Study of U.S. Dailies" (Brian S. Brooks and Tai-en Yang); and "Computer Bulletin Board Systems and the First Amendment: The Common Carrier Solution" (Jennifer R. Dowd and Dale A. Herbeck). (RS)

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PROCEEDINGS OF THE ANNUAL MEETING OF THE ASSOCIATION FOR EDUCATION IN JOURNALISM AND MASS COMMUNICATION (76TH, KANSAS CITY, MISSOURI, AUGUST 11-14, 1993). PART V : MEDIA AND TECHNOLOGY.

CS508351

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The `Talking Newspaper':

The Technical Virtuosity and Monologic Modality of Audiotex(t)

by

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A paper presented to:

Qualitative Studies Division
Association for Education in Journalism & Mass Communication
Annual Convention
Kansas City, Missouri
August 11-14, 1993

The "Talking Newspaper":
The Technical Virtuosity and Monologic Modality of Audiotex(t)

ABSTRACT

This study employs dialogic theory and philosophy of technology for ethical analysis of newspaper "voice information services." Conclusion: Growth of audiotex is (a) bound by notions of technological determinism and the technological imperative, (b) driven by virtuosity values related more to personal aggrandizement of its developers than concern for consequences in the user sphere, (c) signifies a shift in newspapers' communicative stance with readers to a monologic mode emphasizing power/persuasion. Consequences for the electronic "personal newspaper" are considered.

The "Talking Newspaper":

The Technical Virtuosity and Monologic Modality of Audiotex(t)

The mass media scholar and ethicist Clifford Christians (1989a) observes that the "technological system we call the mass media has been understood from an ethical viewpoint," astutely adding that "only in rudimentary form to date have technologies themselves been brought under ethical analysis" (p. 243). His assessment shows that although ethical analysis has focused on such things as the New World Information Order and privacy issues, much of that analysis has been concerned with media functions--news, advertising, entertainment; not particular technologies. Given the inadequacy of communications ethics (lack of a systematic, integrative approach for ethical assessment of communications technologies), Christians urges that we look to both communications theory, particularly dialogic theory, and philosophy of technology.

Taking Christians's plea seriously, this study treats newspaper audiotex (newspaper application of "voice information services," or voice and electronic data messaging) as a case study. Audiotex (or audiotext, as it is sometimes known) is selected because it is a "cutting edge" technology that is precursory to the all-electronic, or "paperless," newspaper. Audiotex is crucial because it experiments with alteration of the communicative stance between newspaper and reader. First, it allows readers to personalize news selection and circumvent exposure to uninteresting parts of the newspaper. Second, it allows the newspaper to learn more about readers' needs, wants, and opinions. Third, audiotex encourages less direct communication between newspaper and its readers through the mediation of systems that recognize, synthesize, store, and retrieve the human voice. These effects will be greatly extended and magnified with the electronic newspaper.

To bring audiotex technology under ethical analysis, I attempt to explicate an acceptable rationale or foundation by which to discuss norms associated with communication technology. I seek illumination from philosophy of technology, and I borrow from dialogic theory as a transition to ethics. I look primarily at the philosophy of technology articulated by Arnold Pacey and I refer to several scholars with close conceptual affinity to Pacey--Manfred Stanley, Jacques Ellul, and Martin Heidegger. Turning to dialogic theory, I rely mostly on the work of Martin Buber and Ivan Illich, and I cite Christians, Ellul, and Floyd Matson and Ashley Montagu.

This study begins with a brief outline of the relevant theoretical and philosophical contributions of these scholars. Then those contributions are applied to an analysis of newspaper audiotex. The method of analysis is qualitative, involving review of many dozens of articles and commentaries appearing in trade and professional publications aimed at newspaper professionals. The review also includes a few general interest publications dealing with the topic. In the end I briefly assess ethical implications of audiotex and extend the analysis to the all-electronic newspaper, or what some developers are calling the "personal newspaper" (PN).

My analysis assumes technology is never neutral and independent, to be used rightly or wrongly; tools are *particular*, with unique properties, biases, characteristics. As Christians

(1989b, p. 125) observes, technology is a thoroughly value-laden process that reflects humankind's ultimate commitments and conceptions of the world, themselves related to such issues as permissible uses, good stewardship, and justice.

In this paper I associate permissible uses with technologies that principally satisfy end-user needs, as opposed to what Pacey calls the "virtuosity values" of designers and developers of technology. And I link permissible uses with communication that emulates the dialogic ("I-Thou") mode, characterized by one-on-one directness and genuine relatedness in the interpersonal spirit, as opposed to the monologic ("I-It") mode. In the end I conclude that newspaper audiotex is driven largely by virtuosity values of newspaper executives and consultants (mostly marketing and advertising people) as they push relentlessly for the maximum feat of technical performance or efficiency or complexity, largely for the sake of prestige and economic gain. I further conclude that audiotex fosters communication largely in the monologic, "I-It" modality that facilitates obliqueness and power relations.

Contribution of Philosophy of Technology

The idea that technology is value free has gained wide acceptance, Pacey (1983) argues, because values that are incorporated into technological products, and into the process of their design and manufacture, are either unrecognized or simply taken for granted. "People have come to feel that technological development proceeds independently of human purpose," writes Pacey. "They see it as the working out of a rational pattern based on impersonal logic" (p. 78). The common view is a one-dimensional, linear view of progress and an acceptance of a technological determinism that "presents technical advance as a process of steady development dragging human society along in its train" (p. 24). The common view trusts in the motto of the 1933 Chicago World's Fair: "Science finds--Industry applies--Man conforms" (p. 25).

While the common view is that technological development is "progressive," sometimes progress is seen as coming in cycles or "waves." Pacey (p. 31) warns that "any historical analysis which seeks to identify patterns and rhythms in development" may become deterministic (implying that processes are at work that no human intervention can alter). Furthermore, we accept that technical advance is the leading edge of progress; each era is thought of in terms of its dominant technology. Thus today we live in the computer age or the nuclear age; earlier it was the steam age, iron age, bronze age, etc. This technical progress, Pacey asserts, is thought to bring social evolution in its wake (p. 24).

It follows, according to Pacey, that technical development is left in the hands of "experts," technical people with the right know-how. The implication: We may dislike the idea of nuclear power or heart transplant surgery but "we have to solve the technical problems connected with these things if engineering and medicine are to develop" (p. 26). In other words, we cannot stop technology.

Pacey warns that this mindset is part of the "technological imperative"--"the lure of always pushing toward the greatest feat of technical performance or complexity which is currently possible" (p. 79). It is as if engineers and scientists are "taken over by a blind, uncontrollable power which dictates that whatever is feasible must always be tried . . . ." (p. 79). Yet Pacey warns that the perception of technical progress as "autonomous" and "irresistible" masks unquestioning acceptance of economic values, and extends to new technological developments promoted for prestige and political gain. Thus we have moon exploration and "Star Wars" defense systems--damn the costs.

Pacey asserts that one must be mindful of the "existential" joys of engineering, or what he calls the "virtuosity values" (p. 81)--values that transcend even economic or military goals and are driven by basic human impulses such as love of speed or power or sport. Thus, development of the hydrogen bomb was so "technically sweet" (p. 81), it simply had to be developed. Similarly, the ancient pyramids and great European cathedrals reflect aesthetic impulses or feelings of mastery over the materials of Nature.

Pacey would have us replace or offset virtuosity values with "user values" (p. 102) that are more closely attuned to basic needs and human welfare. Technology should be driven by concern for what people need, not what professionals can supply. We need an ethical discipline that deals with conflicts between values in the expert sphere and the user sphere. Pacey suggests we look to technology "for the benefit and use of life"--not for magical power--and that we use it in service to the community and for personal fulfillment. We must reject high technology if it means "playing with toys" (p. 113) that have little or no bearing on people's needs.

Stanley (1978) argues that until humankind revitalizes the notion of human dignity, making it society's animating force, it will lack a standard to judge the morality of the technological enterprise. The problem is the sacralizing of the technological motif and the saturating of our language with technicist metaphors, from machineness. "Technicism" he associates with the illegitimate dominance of scientific and technological reasoning over all other interpretations of human existence (p. 12). The challenge before us is to recover our language from the dominance of "experts," imbued with their technicist talk, and allow the primordial force of human dignity to permeate the foundation of our institutions and extend to our cultural, moral, and political thinking.

Ellul (1980), too, complains of machineness, *la technique*. He is concerned with the mystique underlying the technological system; it is a spirit that supremely values machine-like efficiency and subordinates all other values. Ellul sees technology as alienating and self-augmenting, taking on a life of its own in autonomous fashion. Today's technology "does not tolerate being halted for a moral reason," (p. 147) observes Ellul, adding that too often thought is not given to its ultimate human purpose. Ellul laments lack of a systematic, integrative approach to bring technologies themselves under ethical analysis. He states that "man in our society has no intellectual, moral, or spiritual reference point for judging and criticizing technology" (p. 318).

Heidegger (1977/1954) suggests that when technology is professionalized or commandeered for an aim other than to fulfill our lives with purpose and virtue, when it is distorted into the domain of power, it destroys human capacity and thus is repressive and dehumanizing. Man's sacramental relation with nature demands that new technological modes be consistent with natural reality.

Heidegger shares Pacey's sensitivity to the distinction between user and virtuosity values. The distribution of benefits of technology should be based on need and help achieve social justice. Heidegger would agree with Pacey that virtuosity values favor political and economic elites and tear at the roots of our humanity; virtuosity values bind our creativity to technical form and in the process destroy our humanness.

Heidegger and Stanley are concerned that there is something about the technological process that leads us to accept removal of the human agent from the process, so that humans sacrifice their humanity for a "larger" cause. Thus, we come to worship the destining of the technological process, such that once technology is in place, expansion of the process is accepted uncritically; we stand ready to take part in the process but the seeming destining of the process erodes our creative involvement, our humanness.

Moreover, Heidegger shares Stanley's concern for technicist domination of the language and the danger that our social goals and our very definition of humanity become subject to the technological process. Both men are concerned when decisions about technological developments are placed in the hands of experts and executives and politicians, and when the technological process is allowed to be driven only by those with access to it.

Contribution of Dialogic Theory

Martin Buber (1967, 1970) asserts that the essence of ethics is found not in moral codes of conduct but rather in true dialogue (an "I-Thou" relationship) between persons. As Griffin (1991) explains, "truth comes from the spontaneous transparency of self with others, whereas warped communication puts all of its energy into `seeming'"; if one desires genuine dialogue, one will concentrate instead on "being" (pp. 365-366).

Buber (1967) states that genuine dialogue exists when "each of the participants really has in mind the other or others in their present and particular being and turns to them with the intention of establishing a living mutual relation between himself and them" (p. 113). He distinguishes genuine dialogue from (a) "technical dialogue" prompted by the need of objective understanding, and (b) "monologue disguised as dialogue" (p. 113). To illustrate the latter, Buber states that the basic movement of monologue is "when a man withdraws from accepting with his essential being another person in his particularity" (p. 117). The basic movement of dialogue, conversely, is "the turn towards the other," not only in a physical sense but in "requisite measure with the soul" (p. 115).

Christians (1988) takes Buber to mean that "we ourselves live humanly when we accept others with unconditional positive regard" (p. 18). Noting Buber's famous line, "in the beginning is the relation," Christians claims that Buber intends that statement ontologically, "as a category of being." Thus, the "relational reality"--the reciprocal bond, the person as interpersonal--is an "irreducible anthropological phenomenon" (p. 18).

Dialogic theory can be useful discerning values imbedded in communication technologies. Matson and Montagu (1967), for example, argue that the monological approach, which "defines communication as essentially the transmission and reception of symbolic stimuli (messages or commands), finds its classical formulation in the art and science of rhetoric and its characteristic modern expressions in cybernetics, combative game theory, and the repertoires of mass persuasion" (p. viii). The dialogic approach, conversely, "regards communication as the path to communion and the ground of self-discovery," drawing support from religious existentialism, post-Freudian psychotherapy, and sociological interactionism (p. vlll).

Christians (1988) states that the monologic (I-It) mode is in the imperative mood, best fit for control systems; communication systems reflecting this model thus are seen as "transmission belts" or behavioralist or electrical systems carrying stimuli with the intent of eliciting responses. Carey (1989) has criticized this model--what he calls the "power" or "anxiety" model--because it fosters a view of society as a political order (network of power, administration, decision, control), or, alternatively, an economic order (relations of property, production, and trade) (p. 34).

Illich's (1973) important contribution to the dialogic tradition is his notion of "convivial" technology. Technology is convivial if it (a) maintains "natural scales and limits" (p. xxiv) and (b) opposes the ends of mere "industrial production." But to be convivial, the political process--not "experts" or "professional elite"--must govern establishment and control of technology (p. 12). To be convivial, tools must permit "autonomous and creative intercourse" among persons and between persons and their environment. Tools are anti-convivial when linked to conditioned responses of persons to the demands of others or a man-made environment. For Illich, conviviality is "individual freedom realized in personal interdependence and, as such, an intrinsic ethical value" (p. 11).

Illich also shares Stanley's insistence that we recover our language from the dominance of the technicist talk of "experts." This recovery is necessary if our tools are to be convivial. As John Pauly (1983) explains, a convivial society for Illich "necessarily begins with an intelligible language of action not dominated by professional abstractions but rooted in the shared experiences of everyday life" (p. 265).

Audiotex--The `Talking Newspaper'

The term newspaper audiotex refers to computerized services in which readers call the newspaper or an 800- or 900-digit number to record information or receive recorded information. Thus the terms "talking newspaper" and "talking yellow pages." Other names are "voice information services" (VIS) and "telepress."

There are two basic types of audiotex services: sponsor-paid and caller-paid (Potter, 1991a). With the first type, the newspaper advertises a number a reader can call to get a particular category of information, such as weather, sports scores, stock quotations, lottery results, soap opera summaries, movie/book reviews, school lunch menu, horoscope, crossword puzzle answers, etc. Before receiving the desired information, the caller hears a promotional message from the newspaper or an advertiser. The second type involves three-digit-number (800, 900, and 976) services in which revenues are shared by the newspaper, the telephone company, and sometimes providers of syndicated material (Potter, 1991a; M. R. Smith, 1991). Newspapers also can use audiotex to conduct business or otherwise communicate with subscribers (subscription service, complaints, dictation of letters to the editor, reader polls, etc.)

The first major newspaper audiotex system was a subscription-based service begun by Dow Jones in 1984 (Potter, 1991a). In 1992 there were more than 1,000 newspapers (including weeklies and free community newspapers) offering voice information services ("Execs to eye," 1992; Fitzgerald, 1992a). Equipment costs typically range from a few thousand dollars for a small home-made system to $200,000 for state-of-the-art (Jennewein, 1991; Potter, 1991a;).

Much of audiotex's appeal for newspapers stems from popularity of voice personal ads and voice classified ads employing voice mail technology. Usually with personals, placement of the ads is free and a 900-number system is used so that both advertisers and respondents are charged a premium to access messages and responses. For the newspaper, print ads assigned a private voice mailbox can accrue thousands of minutes of pay-per-call revenue each month. Sometimes a paper sells the print ad and gives advertisers free 800 numbers to record messages and hear responses, so that only respondents pay for calls. With other classified messages, the caller or advertiser may be charged, depending on the nature of the message. Some papers subcontract with an audiotex services provider (DiSante, 1992a, 1992b; Fitzgerald, 1992; Weiner, 1992).

Paceyan Perspectives

A review of the trade press reveals that much of the newspaper industry sees expansion of audiotex as inevitable, part of the playing out of the impersonal logic and autonomous progression of technological development. One writer, for example, declared that audiotex is part of publishers' "inexorable drive to Information Age sophistication," adding that "no doubt tomorrow's technology is fast approaching" (Buckman, 1991, p. 8TC). One pictures a train approaching with humankind anxiously awaiting to jump aboard, not sure where it is headed but trusting that it will lead to progress. Another writer, noting how audiotex allows new ways for reporters to collect data, stated that this change in the journalistic process is "*mandated by* [my emphasis] technological changes" that compress time and reward computer literacy (Manshel, 1993, pp. 12TC and 19TC). Still another writer proclaimed: "Telecommunications for newspapers is a door opener, a way to do things differently, but also a way to do things it has never done before. To boldly go--wherever" (Conniff, 1993c, p. 21TC). The implication: There is intrinsic value in doing things differently. Expectation of constant change is consonant with the technological imperative that guides progress. Whatever is feasible must be tried, even when we don't have the foggiest idea where it is taking us.

The trade press is replete with metaphors suggesting that audiotex is "the next wave," or "the next generation" of evolutionary or revolutionary advance for newspapers (Fitzgerald, 1992b, 1992c; "Newspapers Offering," 1992). One writer observed that audiotex is taking publishing into "the dawn of New Age Journalism" (M. R. Smith, 1991, p. 2TC). Another gushed that with "enhanced electronic services" like audiotex, newspapers are "in the thrall of a spell that will touch us all before the decade is out," adding "we are talking about an explosion of media exploration unprecedented in the history of any medium . . . ." (Conniff, 1993b, p. 4TC).

Reflecting the technological determinist's view, one writer compared the quick spread of voice processing technology to the spread of the answering machine, with the inference clear that like the answering machine, which barely existed a decade ago, voice mail is sure to blitz and saturate the market (Ramirez, 1992).

While many writers point out that newspapers have accelerated adoption of audiotex services in part because of the threat of competition from the regional Bell operating companies (RBOCs or telcos) ("Attack," 1991; Fitzgerald, 1991; "Newspaper Voice," 1992; Potter, 1991b), others warn that, with or without RBOC competition, newspaper audiotex and diversification of information delivery systems is inevitable, like the playing out of some autonomous, irresistible force. Typical is the assertion of a former top executive with the Gannett newspaper chain; he stated in a speech that newspapers that try to block the telephone industry from entering information services are "spitting into the winds of change that technology has wrought rather than harnessing those winds to sail on into the new world of information distribution" (Gersh, 1992, p. 7). Notice that, in this executive's view, it is *change that technology has wrought*--suggestive of technical advance, to borrow Pacey's phrase (1983), "as a process of steady development dragging human society along in its train" (p. 24).

The spread of audiotex suggests the working out of a technological imperative that masks unquestioning acceptance of economic values (revenues/profits) and subordination of concern for basic human needs. For one thing, it means advertising messages go in front of news/information instead of adjacent to it. Unlike readers of the traditional newspaper, audiotex listeners cannot completely ignore or avoid exposure to commercial messages accompanying editorial copy. An executive of a mid-size New York daily observed that, done well, audiotex can be very profitable with advertising sponsorship. Addressing an industry panel, the executive urged that a commercial be played on every message to get listeners used to the idea of advertising. "Otherwise," the executive said, "when you introduce ads, callers will be irritated by the intrusion" (Stein, 1993, p. 16). This creeping commercialism can come in double doses with audiotex. One paper in Pennsylvania, for example, offers a 900-WeatherTrak service in which callers listen to a pharmacy advertisement at the beginning of the call and additionally pay 75 cents the first minute--in effect, paying to listen to the commercial message (M. R. Smith, 1991, p. 3TC).

Rapid growth of audiotex has spawned a new trade magazine (Newspapers and Voice), and its columns, not surprisingly, reflect boundless enthusiasm for the technology and bright prospect for newspaper profits. For example, the magazine's editor wrote that voice personal ads not only can bring people together, "they can provide a steady pay-per-call revenue stream about the size of the Mississippi River" (Weiner, 1992, p. 19). With a successful voice personals service, he continued, "the money is rolling in and readers--not to mention those who wield sharp pencils in the controller's office--are happy" (p. 21). Then he quoted an audiotex provider executive as saying, "Many of our clients have a tendency to come to us once they start running voice personals and start receiving their checks and say, `This is fantastic! What else do you have?'" (p. 21). Clearly, then, the concern is with what professionals can supply, not with what people need.

Audiotex developers have produced a lexicon that promotes a technicist aura about the whole enterprise. Even the name audiotex, with the affix "tex" (sounded as in "techs"), contributes to this mystique. One writer complained of "audiotex techno-babel"--jargon such as "navigation systems," "ANI," and "PIN-plus database management" (Fitzgerald, 1992b, p. 14). Another writer--dazzled by words such as "telecommunications," "audiotex," "voice capture," "automated attendance systems," and "unusual abbreviations like `IVR' for `Voice Response Systems'"--observed that "whenever computers are involved in a development, normal vocabulary goes out the window" (DeYoung, 1992, p. 4TC).

Audiotex typically is lumped with digital photography and electronic pagination as "cutting-edge developments" in the newspaper industry (Potter, 1993). These developments are presumed to demonstrate that newspapers have shed their tradition of being averse to change (Conniff, 1993b). Toward that end, it must please editors to see technicist headlines such as these, which appeared in one issue of <u>Newspapers & Voice</u> (1992): "SpectraFAX Introduces Liaison Data Connectivity Products," "Speaker-Independent Voice Recognition Available for Hello! System," and "Innovative Technology Debuts Voice Perfect Audioforms" (pp. 35 and 37).

Furthermore, it is an emblem of pride for smaller papers to be able to boast they have audiotex systems (Potter, 1993).

Still, one can get carried away with hyperbole and gee-wizardry connected with the technology. As one newspaper executive explained, "All an audiotex system does is simply convert analog signals to digital and store the information on a disc. So, we got some answering machine software at the store and played with it. This isn't rocket science" (Potter, 1991a, p. 12).

Perhaps audiotex is made to seem more complicated than it is in order to create a technicist aura, and to underscore the fact that the technology is in the hands of experts with their specialized knowledge. Viewed in that context, the technicist talk becomes a means to shut out any questions or objections from non-experts. If we heed Stanley and Heidegger and Illich, we will see the creation of technicist vocabulary as a means of commandeering and professionalizing the technology and perverting its use for the sake of power, prestige, and political/economic gain--not for the sake of human welfare, fulfillment, and dignity. Or, to use Pacey's schema, we will see technicist talk as saturating the expert sphere, where virtuosity values reign, and shielding against encroachment of the user sphere, where end-user values predominate.

Dialogic Perspectives

One great paradox of audiotex is that it makes the newspaper a more personal object, more closely attuned to readers' individual interests, yet at the same time de-personalizes relations with customers by substituting synthetic communication for communication via the written word (letters to the paper) or direct interpersonal (talking to a newspaper representative, live, on the telephone). While acknowledging that live operators are preferable from a customer (end-user) standpoint, telephone companies converted to voice-automated services to cut costs. Some observers say the same pressure drives newspaper audiotex since eliminating live operators effectively downsizes payrolls (Davis, 1992; Langer, 1990).

Dialogic theory helps us sort out this paradox, and provides insight into its ethical ramifications. Recall the contrast between the "I-Thou" modality ("spontaneous transparency of self with others") and warped "I-It" communication that puts all its energy into seeming rather than being. Genuine dialogue is a "turn toward the other" in body and soul; it engages the reciprocal bond, the person as interpersonal. It involves, as Christians (1988) would explain, accepting with one's essential being another person in his or her particularity, with unconditional positive regard.

Given this continuum, audiotex works at one extreme to counter genuine dialogue in several ways. Audiotex involves voice recognition systems that constrain free-flowing speech. Voice information systems, for example, typically involve a guided question-and-answer path that takes the caller to the relevant information, and the confined, closed-end nature of the experience can be frustrating. Callers complain of being captured in "voice-mail jail," described by one writer as "that labyrinth of recorded voices issuing instructions from which there sometimes seems no escape short of hanging up" (Ramirez, 1992, p. 9). One complainer called voice mail "a telephone form of Chinese water torture" and "the voice mail from hell" (Davis, 1992, p. 12). Discrete voice recognition requires callers to pause briefly between each spoken command from the robotic voice for confirmation ("Speaker-Independent," 1992). Speech synthesis software converts electronic or fax text to a "natural-sounding" female voice, but the voice only "seems" natural ("Sound Bytes," 1992). Actually, the voice of mail voice (the "automated attendant" or "robot switchboard") is usually that of a woman (quite often the same woman, an employee of the largest maker of voice-mail equipment) whose voice is prized for its friendly yet authoritative persona. Announcements are assembled out of numerous separately recorded sound bites that have to be put together "as if" they were spoken together. Some scripts have to be rewritten because particular words do not properly "digitize" (convert into computer code) ("It's Jane," 1992).

This example illustrates how audiotex applies to Ellul's notion of alienation, of disconnectedness, caused by the dehumanizing aspect of machineness, or machine-like efficiency. Certainly it relates to Heidegger's and Stanley's concern that there is something about the technological process that leads to acceptance of removal of the human agent from the process, understood in terms of efficiency. A telephone executive explained: "It's inevitable that everyone's going to computerized voices. It's cost-saving. It's more efficient" (Langer, 1990, p. H3).

A further point to consider is that consumers are prone to accept this new technology, despite their complaints. The slogan noted earlier--"Science finds, Industry applies, Man conforms"--does not rule out the possibility that while humankind conforms, humankind may grumble about the change. But there is never any doubt that, given time, we will adapt to the new technology. Making this point with audiotex, numerous writers (Langer, 1990, p. H3; Markoff, 1990) cite the example of the answering machine; at first it was criticized for being anti-social, but after people adjusted (conformed) it was considered anti-social not to have one.

Audiotex also alters the newspaper's relationship with the community. An executive with the Knight-Ridder chain confided that the downside of audiotex is that "we've lost the personal touch." At some small and medium-size papers, he explained, "the same operator would be on the console for 10 to 15 years. She knew everybody and served almost like a help desk" (Davis, 1992, p. 13). The executive said newspapers should bring back some telephone operators as customer advocates. Furthermore, with audiotex, readers now call the paper late at night, when no one is in the newspaper building, and communicate--dictate a letter to the editor or get the names of local soldiers serving in Somalia, for example. With audiotex, newspaper personnel now talk about "24-hour capture" of funeral notices and obituary information, whereas before audiotex it was not uncommon for someone in the newsroom to talk, live over the phone, with a member of the family of the deceased (Todd, 1992). Similarly, audiotex means automatic taking of wedding announcements, community events, and letters to the editor; no one at the newspaper has to deal on an interpersonal level with any individual bearing this information; newspaper personnel merely process the information, at the newspaper's convenience.

Audiotex also affects newsroom operations. First, reporters do interviews without talking to the interviewee. That is accomplished by leaving questions on the interviewee's voice mail, and picking up the reply after the interviewee has left answers in the reporter's voice mailbox (Davis, 1992). Audiotex experts call this "mailbox conversation," and contrast it with what they call "real-time conversation," the latter being when humans talk to each other live and spontaneously, as in a conventional telephone conversation (Weatherford, 1993). Second, newsrooms are encouraged to use database computer technology provided by audiotex to conduct and report reader surveys on a variety of questions and issues.

All of these developments suggest that newspapers are, in Buber's way of thinking, taking a *turn away* from their readers, both physically and in terms of the soul. There seems to be no sense of a living mutual relation between individuals at the newspaper and individual readers. Instead, audiotex fosters the basic movement of monologue. At best, it fosters a "technical dialogue" based on the need of mere objective understanding.

As audiotex spreads, newspapers claim their primary goal is to be the community's "No. 1 information provider" (Conniff, 1993c; Hackel, 1992; Kelsey, 1993; "Newspapers Offering," 1992; Sutcliffe, 1993). Newspapers use this claim in their protracted battle with the telephone industry over electronic information services, distinguishing between newspapers' function as "information provider" and the telephone companies' function as "information conductor." The publishers make the public policy case on technical and economic grounds, fearing monopoly abuse if data transmission technology is integrated via one player (Bradsher, 1991; Jones, 1992; Rosenberg, 1991a; Walker, 1991).

Absent in this debate is any claim by newspapers to be more closely attuned to the informational needs of the community. Given that many papers have long been established in their community, one might expect papers to claim that readers value them as more than mere information providers. Newspapers might argue that readers value them for their community leadership, maintenance of cultural continuity, and fostering of a sense of relatedness and shared experience. Readers also might regard the newspaper as the community's conscience, mindful always of the community's social, cultural, and historical roots--its soul. Valued in these ways, a newspaper conforms to Illich's notion of a "convivial" tool and Matson and Montagu's notion of dialogic communication as the path to communion and the grounds of self-discovery.

It is worth noting, too, that audiotex has generated little enthusiasm among rank-and-file newsroom staffers and lower-echelon news executives. Articles about audiotex typically are found in journals aimed more at executive suites of publishers and other top executives (Editor & Publisher and presstime) than the newsroom (Columbia Journalism Review and Quill, etc.). Except for providing quickie reader surveys, and sparing reporters the burden of taking down routine information (weddings, calendar, etc.) via telephone, audiotex simply doesn't offer much benefit to the newsroom.

Another factor for the newsroom is the dubious news value of audiotex "information." For example, top audiotex features provided by one medium-size Iowa paper are, in alphabetical order: dog racing, horoscope, lottery, soap opera updates, sports, stock market, trivia quiz, and weather (Debth, 1992). This sort of fare is rarely called news in audiotex circles; the euphemism "news enhancement" is favored (Stein, 1993). One audiotex equipment executive explained that what audiotex services have in common is immediacy, convenience, and an appeal to callers' sense of lust, greed, or fate (M. R. Smith, 1991). Not surprisingly, a paper's audiotex director typically has a marketing/advertising background, or is a sub-echelon editor borrowed from the newsroom to lend an air of legitimacy to the paper's audiotex effort (Kelsey, 1992; M. R. Smith, 1991). In sum, audiotex is being advanced by marketers, not news specialists. Nowhere is that made more clear than in Editor & Publisher's annual telecommunication issue; essentially all non-advertising copy is produced by audiotex consultants, most of whom have a vested interest in seeing audiotex grow.

One reason advertising and marketing people adore audiotex is because it permits the newspaper, much like its direct-mail and shared-mail competitors, to precisely target advertising messages to specific readers. One large Midwestern daily, for example, pitches audiotex to advertisers by distributing an information kit that pledges: "Every dollar you invest hits the target!" The kit emphasizes that a "captive audience" hears the advertisement before receiving the requested data (Stein, 1993).

This sort of rationale fits squarely in the monologic mode because it embraces a technology for purposes of persuasion and, ultimately, economic or political gain. One is reminded of the cybernetic, or behavioralist, or power-anxiety model. The message equates with command or stimulus from subject or sender, and its effect equates with a particular response on the part of the object or receiver. Audiotex's "I-It" modality goes beyond mere technical dialogue prompted by a need for objective understanding; audiotex facilitates communication for purposes of control. (It is not mere coincidence that audiotechies are fond of the word "capture.")

The monologic modality is even more clearly manifest with the next technological "wave" following audiotex--database marketing. Database marketing uses PINs (personal identification numbers) and interactive technology (audiotex or electronic data using computer terminals) so that readers get information tailored to their specific requests, while the newspaper acquires marketable information about readers. The database of information obtained from callers generates lists of prospective customers by category; the lists then are used by the newspaper, advertisers and direct marketers to pinpoint prospective customers (Jennewein, 1991; "Newspapers Offering, 1992; Rosenberg, 1991b).

One marketing executive with a large Midwest daily noted that his paper's database marketing system contains all known relationships with customers. If a reader responds to a promotion in the paper, "we capture that information. We tend to define database marketing as relationship marketing" (Puerner, 1993, p. 14TC). A dialogic philosopher might ask: What sort of relationship? One based on fostering a greater sense of human relatedness and personal autonomy, or one based on power/domination?

Summary and Afterword

This study leaves one with a strong sense that newspaper audiotex enthusiasts adhere to a technological determinism that deeply reflects virtuosity values and the technological imperative.

For the most part, the industry sees audiotex as one more step in a process of steady development and progress. Whether they see this technical advance as the working out of a rational pattern based on an impersonal logic is difficult to say, but I suspect so. That is because, as Anthony Smith (1986) reminds us, in the back of the minds of designers of all present newspaper technology systems, there is the idea of an ultimate system employing a "paperless" or all-electronic technology. The ultimate system depends entirely on conversion of all analog signals to digital. With that conversion complete, the electronic newspaper will be linked to a vast, global network of digitized "information highways" interfaced with any number of display forms (audio, video, print, etc.). Audiotex is merely one more step in the analog-to-digital conversion. Thus, the reason commonly cited by newspapers for adopting audiotex is the experience gained with electronic delivery (Kelsey, 1993). This preparation for the inevitable is the sort of behavior Heidegger refers to as the worshipping of the destining of the technological process--the notion that once the technology is in place, expansion of the process is accepted uncritically.

Moreover, newspapers fail to distinguish qualitatively people's informational *needs* from their informational *wants*. Audiotex offerings are based on demand and popularity, with little thought given to dissemination of news that is important (for the sake of the community) but perhaps unpleasant or distasteful. The technology also is driven by what professionals can supply; there is fascination and allure of the "technically sweet" and achievement of maximum technical complexity and performance.

This study also shows that technicist language of audiotex (a) reminds us that experts are in charge of development and (b) contributes to a state of mind that precludes legitimation of any reasoning or interpretation other than the technical. This distancing from language rooted in the shared experience of everyday life is one more way audiotex disjoins the user sphere.

I have tried to show how in several ways audiotex opposes the movement of "I-Thou" dialogue and alters the communicative stance and bond between newspaper and community. With voice recognition/synthesis systems, audiotex removes us several steps from live, direct, spontaneous communication between newspaper and reader; with audiotex, readers communicate with the paper via the paper's machine, and in some cases the paper's machine communicates with the reader's machine. No one has to talk with another human being. For the sake of efficiency, we accept removal of the human agent from the process. This is, to borrow Buber's phrase, a turn away from the other physically and in terms of the soul.

This "turning away" is part of the monologic ("I-It") modality, with its emphasis on seeming (rather than being) and technical dialogue (cued by the need for objective understanding). In many cases it is clear that the application of audiotex is linked to power/persuasion goals of the newspaper and its advertisers--not to goals of filling readers' lives with purpose and virtue and providing the grounds of communion and self-discovery. In short, audiotex is not a convivial technology;

instead of fostering a greater sense of human relatedness and personal autonomy, audiotex encourages political and economic domination in a system run by experts and professional elites.

This conclusion may be unduly harsh. Perhaps, after all, audiotex does not present a serious threat to socially responsible journalism. What is the harm letting readers call in for an advertising message along with horoscope and ball scores? If audiotex remains confined to the periphery of a newspaper's news operations, perhaps we should not be too concerned.

However, we should bear in mind two crucial biases of audiotex technology: (a) its interactive nature, which allows for the build-up of reader-subscriber-customer databases and (b) its ability to fragment and customize presentation of news and entertainment according to individual tastes. How newspapers handle this new capacity with audiotex tells us much about what to expect with the coming of the electronic or "paperless" newspaper.

Generally, there are what I describe as two models for the electronic newspaper: the browse model and target model. The browse model assumes that readers prefer news organized and edited by news organizations. One prominent designer envisions a tablet-sized computer that will produce a newspaper front page on the screen. With the tap of a pen, the reader can call up stories from a menu, flip pages, turn a photo into a television news replay, or browse the sports pages, features, comics--even making reservations from a restaurant ad (Markoff, 1992). Essentially using menu commands, the reader will be able to scan any and all content in the newspaper, much as with conventional ink-on-paper technology.

With the target model, the reader specifies a customized package of content (categories) of news, entertainment, and advertising. As time passes, the interactive nature of the system permits the newspaper to monitor actual reading patterns and construct a profile of the reader's interests (Conniff, 1993a, 1993c; Kerwin, 1992). It is even possible that with each new edition the newspaper can alter the content based on past time spent on various content categories (Barker, 1992). This target model, or personal newspaper, has the added advantage of converting this "personal" information for the benefit of advertisers. As one audiotex expert explained, the personal newspaper is "the marriage of targeted content and targeted advertising so that readers get what they want to read, and advertisers get to reach those readers who want to buy their products" (Conniff, 1993d, p. 15TC)).

What is most disquieting about the spread of newspaper audiotex is that it points the way toward acceptance of the target model, with its emphasis on (a) giving readers only what they want (or expect), and (b) database build-up for more efficient marketing and persuasion. Leo Bogart (Freedom, 1993) observes that with the target model "more information is acquired intentionally and less serendipitously as a result of a person's own editorial judgments. This means that there is less and less of a role for the professionals who package information" (p. 11). Placing news judgment in the hands of professionals may sound distinctly monological and anti-convivial, but Bogart points out correctly that without someone to select, package, measure, and label information, the flow of information takes on a random quality and results in chaos and mental indigestion. Furthermore, Bogart (1990) adds importantly, "Editors have to know what readers will tolerate, but their job is to push up constantly against the limits of that tolerance and thus to expand it" (p. 60).

Choice of model has serious ramifications for the broader community, too. One argument holds that we live in a world of many communities, communities of the mind--not just one community based on location (Freedom, 1993, p. 21). Using the target model, the electronic newspaper can tailor the news to suit these communities of the mind. One news package custom-tailored for a liberal, another custom-tailored for a conservative; one for a white supremacist, another for an Afro-American; one for a pro-abortionist, another for an anti-abortionist; and so on. What is missing in this model, of course, is presentation of news that any or all of these special-interest groups wish not to be confronted with, but which nonetheless has important bearing on the welfare of the community or the polity. What is missing is what David Paul Nord (1985) would describe as a newspaper that assumes great interdependence among diverse city dwellers and reflects the collective life of the city; a newspaper that articulates a vision of public community, that urges a community spirit, and that provides readers with a limited, organized, common frame of reference. Instead, with the target model, a newspaper is private in outlook and individualistic in its focus; it sees the community as a fragmented assortment of private affairs. For those of us concerned about the mass media's contribution to so-called "eclipse of community," the target model promises total blackout.

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An Historic Opportunity?: Communication Research in the Design of Communication Interfaces and Systems

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Paper presented to the Communication Technology and Policy Interest Group
of the
Association for Education in Journalism and Mass Communication

A version of this paper is to appear in
the Future of the Field Issue
Journal of Communication (Winter, 1993)

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Center for Research in Journalism and Mass Communication

An Historic Opportunity?: Communication Research in the Design of Communication Interfaces and Systems

Frank Biocca

ABSTRACT

This paper argues that mass communication has reached an historic juncture.

The Situation:
Communication interfaces are rapidly changing; they increasingly envelop the body of the user. Media are becoming as pliable as messages. Communication systems are expanding to deliver more information, to more people, in more places: Cyberspace is expanding.

Our Standard Response to New Communication Technology:
The paper suggests a slightly different orientation to research in response to these upcoming changes in communication interfaces and systems. Socially effective research may require much more than policy analyses and studies of communication culture and effects.

Another Approach?:
The author argues for a *human factors approach* to communication research. The human factors approach - common in psychology and human-computer interface design - is introduced. The human factors approach calls for interdisciplinary research teams actively involved in the design and evaluation of new communication interfaces.

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> In order to reconquer the machine and subdue it to human purposes, one must first understand it and assimilate it. So far we have embraced the machine without fully understanding it. (Mumford, 1934, p. 334).

> In order to understand the phenomena surrounding a new technology, we must open the question of design - the interaction between understanding and creation. (Winograd & Flores, 1987, p. 4)

Communication research seems forever ordained to consider and reconsider the means of communication, the machinery with which we create meaning. In many ways, communication research is about how humans create techniques and technologies to turn each others' thoughts into each others' experiences.

Lately, our attention has been drawn to the circuits, interfaces, and fiber-optic cables that increasingly bind our minds together into giant networks - the giant sea of information and codified experiences recently dubbed "cyberspace" (Benedikt, 1992). The introduction of virtual reality technology spurs us to think once again about the relations between thought, the senses, and the machinery that facilitate communication expression and distribution (eg., Biocca, 1992a; Biocca & Levy, forthcoming). Before each new communication technology becomes an invisible part of our "second nature," its novelty increases our awareness of how much communication is socially constructed (e.g., Biocca 1987, 1988). As in the Wizard of Oz, the flutter of the curtain makes the human operator of the giant machinery of communication suddenly visible: he is us.

In this article I will not propose another "paradigm," "method," or "school." Rather, I seek something more basic and immediate. My words are motivated by a sense of urgency, a feeling that over the next twenty years the evolution of communication technologies may offer a critical - can I bring myself to write historic - opportunity for researchers to positively shape the channels of mediated human communication. I wonder if communication research is well equipped to meet the challenge. I hope that it is. I fear that many research paradigms inadvertently condemn communication research to the role of spectator in the long march of communication technology. Communication research cheers or boos, but the march of communication technology goes on regardless. If we really believe that communication environments are socially constructed, then can communication research aggressively engage in their construction?

In this article I want to focus on communication research's role in the conception, infancy, and adolescence of a young medium. There must be a time in the development of a new communication medium, interface, or environment when its form, like that of a child's, is still pliable, when the forces of its social construction are most fluid. At the birth of each new communication medium and system we should not ask whether the technology is a liberator or a criminal - the answer is always that it is both and neither. I'm reminded of the journalist from ABC's Nightline who asked me whether virtual reality was a "good thing" or a "bad thing." Rather, like Lewis Mumford, he might more profitably have asked how we can "subdue it to human purposes."

First, I will sketch the social setting - an historic juncture in the communication environment - then I will try to sketch out a possible research response, a human factors approach to communication research.

THE HISTORIC JUNCTURE: ARE MEDIA INTERFACES BECOMING AS PLIABLE AS MESSAGES?

> It is evident that something new is happening in human communication... The name doesn't matter. What matters is that every major development in human communication has begun with a major new development in communication technology. (Schramm, 1988, p. 341)

For 50 years mass communication research developed in an environment of relatively stable media technologies. Our mass media interfaces - books, newspapers, radio, and television - remained relatively unchanged from the late 40s to the 90s. The father of the academic discipline of communication research, Wilbur Schramm, was there in the first decade, and he was able to sense the changing, turbulent communication currents in the last decade of his life. In those 50 years, technological innovation did not radically alter the "face" of our media interfaces or the experience of mediated communication. Media evolved slowly. Most research, especially experimental and critical research, focused mostly on those elements of the media that were most pliable and changeable, media messages.

This is changing. The computer has evolved from a glorified typewriter-calculator into a major communication medium. From 1980 to 1990 the annual consumption of personal computers increased by approximately 900%. Expenditures on personal computers rose by 1100% during that same decade and in 1991 was a $43.2 billion dollar industry (CBEMA, 1991). The personal computer is only the beginning of a larger wave of "smart," interactive communication devices and systems (Millison & LeGrow, 1993).

The collision and merger of the communication and computer industries is sending a shock wave of change and instability through the mediated communication environment. This can be characterized as the restructuring - some say convergence, I say expansion - of (a) communication systems and (b) communication interfaces.

The Expansion of Cyberspace: Fluctuation, Competition, and Instability in Our Communication Systems

Communication systems can be defined as:

Communication Systems = Transmission channel(s) + Organizational Infrastructures + Communication Interface(s).

Our communication systems have entered a state of flux. Americans use a number of transmission channels: the broadcasting spectrum, the telephone system's copper wires, cable's coaxial wires, the cellular spectrum, direct broadcast satellites, and fiber optic cabling. The organizations who own each channel are fighting for the opportunity to pump more-and-more mediated information into the home, the car, and, ultimately, the mind. The spread of digital communication methods and information compression is allowing each one of these channels to offer more information and an expanded but overlapping range of communication services. The organizational infrastructures associated with these transmission channels - the telephone, broadcast, cable, and computer industries - are entering a period of intense competition and restructuring. It is a struggle; new structures and alliances are being formed. As a result, the interfaces and information flows associated with these institutions are in flux.

The social communication environment is expanding and restructuring; our mediated communication experiences are certain to take on new features and patterns as we become more strongly interconnected by our communication systems.

The Expansion of Communication Interfaces: Increasing immersion of the body

> The protean nature of the computer is such that it can act like a machine or like a language to be shaped and exploited. It is a medium that can dynamically simulate the details of any other medium, including media that cannot exist physically. It is not a tool, although it can act like many tools. It is the first metamedium, and as such it has degrees of freedom for representation and expression never before encountered and as yet barely investigated. (Kay, 1984)

Alan Kay, master designer at Xerox Park, Apple, and MIT's Media Lab, lays out the challenge for communication scholars very clearly. The computer can give birth to a medium that can simulate any other medium. At the same time it offers a means of communication and expression that has yet to be explored and understood (i.e., virtual reality?). How can communication research take up this challenge?

The interface and the type of communication that it supports is inevitably a central concern of human communication research By way of definition I offer the following:

Communication Interface = sensory media + codes + information.

Like the communication systems to which they are linked, communication interfaces are also changing. The communication interface is becoming more complex and flexible as it addresses more communication needs. For example, advanced communication and simulation interfaces like virtual reality attempt to engage a wider range of sensory channels (Biocca, 1992b; Biocca & Delaney, forthcoming). Within each sensory channel, sophisticated displays are presenting a wider bandwidth of information. For example, projection HDTV fills more of the visual field at higher levels of resolution. Further developments in virtual reality interfaces have as their explicit logic the attempt to match and, maybe, surpass the sensory variety and information density of the physical environment. *The communication interface is expanding to envelop more of the senses.*

The phrase, interactivity, is often used. It is a misleading term. At its most basic, it simply describes the fact that advanced communication interfaces are increasingly responsive to somatic activity: behaviors like key presses, mouse movements, eye movements, body position as well as changes in autonomic activity. New input devices connect more and more somatic activity to the interface and to the communication system (Biocca & Delaney, forthcoming). *The body is being immersed into the communication interface.*

Let me summarize the historical juncture I have described. Communication systems and interfaces are not just being merged, they are being expanded: expanded coverage of the sensory channels, expanded range of somatic inputs, expanded geographic coverage, expanded bandwidth of information and services. *Like the physical universe, cyberspace is expanding.*

How Might Communication Research Respond to Changes in Communication Systems and Interfaces?

What are the implications for communication research? History suggests that it is extremely likely that communication theory and research will be influenced by changes in the communication environment. Faced with increased changes in the communication environment, communication researchers could simply be *reactive:* forecast or evaluate "developments," "trends," and "effects." This response remains important. But how might communication research help achieve Mumford's goal and subdue communication systems and interfaces to human purposes? If we are entering a period of creative instability and expansion, communication research might be more *proactive*. Researchers might find it valuable to not just "critique" or "measure," but also participate in the social construction of mediated communication - in communication *design*. Communication researchers might try to creatively engage and influence the evolutionary process of media design - of human-computer interaction.

DESIGNING HUMAN-COMPUTER INTERFACES FOR HUMAN COMMUNICATION:A HUMAN FACTORS APPROACH

Upon analysis, we find that not just each medium but *each act of communication is an act of design*. For example, this sentence is an act of design. If researchers systematically study these acts of communication design - be they psychological or social - then communication science must be, in part, a science of design. We often ask how humans design messages and media, and how those designs somehow redesign their thoughts, behaviors, and social environments. We are increasingly aware that communication is an environment, and that we participate in its design.

To use an existing term, let me suggest what might be called the *human factors approach* to communication research and design. I borrow the term, human factors, from a large and growing interdisciplinary community of researchers. Borrowing a term is often dangerous. The term, human factors, may carry with it some unwanted baggage. I will probably not be able to avoid this problem here. But like other examples of paradigmatic appropriation (Kuhn, 1967), I hope to begin the process of tailoring the term for communication research in the course of this article.

In the fields of engineering, computer science, and psychology the words, human factors, refer to important aspects of human performance, behavior, and desire that must be considered in the design of any machine, hardware, program, or information system. For example, interdisciplinary teams of engineers, computer scientists, and psychologists are concerned with human factors when designing a new communication interface, or, more generally, human-computer interaction (Biocca, 1992b; Card, Moran, & Newell, 1983; Laurel, 1990, 1991; Rubenstein & Hersh, 1984; Shneiderman, 1990; Vassilou, 1984). Like communication researchers, many human factors and human-computer interaction researchers live on the boundaries between traditional fields. Many can be found at the intersection of engineering, computer science, psychology, and anthropology (e.g., Baecker & Buston, 1987; Hancock, 1987; Rubenstein & Hersh, 1984; Slavendy, 1987; Wickens, 1984; Woodson, 1981). To fully consider various human factors, human-computer interface design team are often interdisciplinary (eg., Apple's design group; Kim, 1990). One can increasingly find communication researchers involved in interface design (e.g., Biocca & Levy, forthcoming; Fish, Kraut, Root, & Rice, 1992; Gay, 1993; Heeter, 1992; Meyer, Applewhite, & Biocca, 1992; Nilan, 1992). In some ways, the human factors approach to communication may signal a return to the creative interdisciplinary synergy that seemed to characterize the spirit of communication research in its early years (e.g., Cherry, 1957).

A concern with human factors has become central to the design of human-computer interfaces (HCI). The design of most technologies, including communication technologies, has moved from what Bullinger (1986) calls a "technocentric approach" (technology controls man) to an "anthropocentric approach" (man controls technology). The technocentric approach is exemplified by the work of industrial engineer Fredrick Taylor (Nelson, 1980) and the Gilbreths (Mandel, 1989) whose time and motion studies sought to make humans conform to the machine processes of industry. By contrast, the goal of many HCI researchers is that the interface conform to the thinking, the objectives, and the habits of a particular group of users (Shneiderman, 1991). If one could summarize the prevailing attitude of human factors researchers in one sentence, it might read: *The user should not have to conform to the machine; the machine should conform to the user.*

The intense study of human factors in human-computer interaction emerged from the design of "life-critical" computer systems such as air traffic controller systems, nuclear power plant control systems, advanced fighter cockpits, and medical emergency systems. In such systems, failure of the computer-interface to conform to the information and communication needs of the users could lead to death and disaster. The interface between the computer and the human is a communication system, a messaging system for encoding and decoding information. In life-critical systems the communication interface must facilitate the critical exchange of life-and-death information.

COMMUNICATION DESIGN AS AN ELEMENT OF COMMUNICATION THEORY AND RESEARCH

Of all technologies, communication technologies provide the greatest human factors challenge. It is interesting to note that the very word *technology* is a merger of the Greek word *techne* for "art, craft" and the word *logos* meaning "word, speech." The origins of the word suggest that communication is at the heart of technology. There may be something essentially different about considering human factors in the design of communication technology - systems that are true to the early Greek sense and improve the craft and art of making signs, words, and speech. More than just architectural or engineering design, communication systems subsume both mind and body into simulations of physical and social reality - to borrow an emerging term, into virtual realities.

Communication science has two arms that grapple with the forms and structures of human communication. One arm of communication research tends towards basic science. Our basic understanding of the human factors themselves is an extension of the basic sciences. The interdisciplinary human factors research team may consider a number of human factors when designing interfaces, including communication interfaces. Table 1 lists some of these.

Insert Table 1 about here

Communication science has another arm, one that tries to design and build. Design is a form of human expression; it builds on the essential freedom and indeterminacy of human communication. Its success must be measured not just by the truth of its principles but also by its ability to influence the design of communication tools and environments. Otherwise, communication science is like the architect whose buildings are never built.

It would be narrow minded to merely dismiss design as the "application" of communication research. *Design principles are theories of communication.* Functioning designs, like a new computer interface, can be models of communication theory. An interface design can also be a form of experimentation, especially when *systematic evaluation* is a part of a design implementation. Designing interfaces as vehicles for theory building and experimentation has a key advantage: the concrete, specific details of implementation force the researcher to specify his or her ideas in detail. Theory, interface design, experimentation, evaluation, and interface redesign can be part of one continuous flow of proactive communication scholarship (see Biocca, 1993).

TEMPERING THE VISION WITH THE LIMITS OF COMMUNICATION DESIGN

Habermas (1981a) argues that there is a

decoupling of what he calls the "system" and the "lifeworld." The lifeworld is increasingly subordinated to the demands of the system. Distrust of technology emerges in part from the feeling that our sphere of freedom is being restricted by the system (i.e., the scientific-technical-industrial apparatus). In the past our reaction to the computer was a reaction to one of the most visible parts of the impersonal industrial system. Computer cards came stamped with the message, "do not fold, spindle, or mutilate" from a regime that seemed to "fold, spindle, and mutilate" the users of the system. Critics like Ellul (1964) bemoaned our preoccupation with technique and how it had helped divorce technology from human ends.

As computers and communication technologies begin to merge, a creative, informed, and uncompromising human factors approach to communication research can struggle to regain control over technology and to subordinate aspects of the system to the goals of individual users. Good interface design tries to turn seemingly impenetrable systems into flexible communication tools. We must assume that it is possible to develop a communication research approach that can do more than simply critique practices or assemble lists of possible effects, but can actively help reclaim communication technology for the individual: for the exercise of creative power, enhanced expression, and unfettered communication. But obviously, this is as much a utopian vision as a research program. I am painfully aware that the Janus-like nature of technology does not guarantee positive outcomes.

But a strength and value of a human factors approach to communication design must be a recognition of its limits. Only some aspects of communication systems can be designed by "designers"; communication design is at best facilitation, not specification. The pen, the printing press, and the telephone are good models. They facilitate communication; they don't specify it. Many key aspects of communication environments are not designed by designers; they are designed by users. Users must be co-designers. Like languages, users finalize the design of communication systems (i.e., Saussure's distinction between langue and parole).

Communication environments are ultimately defined by the unpredictable diversity of communication action undertaken by individuals and social groups inside a communication environment. The strength of a human factors approach stems not from a passive observation or measurement of this fact, but from an active engagement with, support of, and amplification of the users' communication actions. The iterative design, evaluation, and redesign of communication environments becomes a natural part of communication theory and research.

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Table 1

EXAMPLES OF HUMAN FACTORS CONSIDERED IN THE DESIGN OF COMMUNICATION AND HUMAN-COMPUTER INTERFACES

COGNITIVE

Perception and Psychophysics: capacities and properties of human sensory channels
Attention: reaction time, time sharing, workload, and fatigue
Motivation: individual differences, task motivation, emotional satisfaction
Decision Making & Judgement
Procedural Memory: skill learning, usage, and forgetting
Semantic Memory: meaning construction and mental models

INSTRUMENTAL

Individual Communication Goals: Related to interface usage
Organizational Communication Goals: Related to interface adoption and usage
Social Communication Goals: Economic, public policy, social advocacy
Relationship to Other Communication Instruments: Range, access, usage, and perceived utility of other Interfaces

NORMATIVE

Cultural Variation in Communication Expectation, Performance, or Norms
Contextual and Environmental Factors: affecting or defining performance
Ethical Considerations: related to interface use or abuse

EXPRESSIVE

Code Usage: extent and usage of existing communication codes
Message Variability: likely range of message content and contexts

SOMATIC

Anthropometry: relationship of human body shape to the interface hardware
Biomechanics: forces, motion, and feedback patterns of the human body during use of the interface

Author Notes

Dr. Frank Biocca is the director of the Center for Research in Journalism and Mass Communication at the University of North Carolina at Chapel Hill.

This article began as a set of reflections on the direction of my own research during a leave at Stanford and the University of California- Berkeley. Back in Silicon Valley where I onced worked. I had a chance to return to my earlier interests in communication technology and cognition. With time to think, I critically relistened to the distant echoes of the Marshall McLuhan lectures I heard as an undergraduate in Canada. This article and others emerged as part of my attempt to refocus my questions about communication technologies and my approach to communication research.

I would like to thank Byron Reeves, Don Roberts, Steve Chaffee, Richard Cole, and Todd Gitlin for making my stay in California possible, pleasant, and productive.

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Moral Rights, New Technology, and Motion Pictures: A Dualistic Policy Proposal

by

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Presented to the Communications Technology and Policy Interest Group,
Association for Education in Journalism and Mass Communication
1993 meeting
Kansas City, Missouri

Running head: MORAL RIGHTS AND MOTION PICTURES

Abstract

Although there has been a great deal written on the moral rights of artists in the U.S., much of the literature fails to address the problems encountered by filmmakers who's work is technically altered (e.g. colorization of black-and-white films) by copyright owners (production companies). The U.S. legal system has traditionally favored the economic rights of copyright owners rather than film artists. The U.S. recently joined the Berne Convention in part to gain global protection for U.S. copyrights, but the convention requires that member countries protect filmmakers' rights to claim authorship and to prevent mutilation/destruction (e.g. colorization) of films. How can the U.S. comply with this mandate while maintaining its "monist" approach to copyright enforcement? This paper reviews pertinent theoretical and legal literature, then suggests a new moral rights policy based on the French "dualist" perspective on authorship/copyright debate.

Author Note

The author wishes to gratefully acknowledge the assistance of Dr. Joe Foley at the Ohio State University and three anonymous reviewers for comments on various drafts of this paper. The author assumes full responsibility for any factual errors.

MORAL RIGHTS, NEW TECHNOLOGY, AND MOTION PICTURES:
A DUALISTIC POLICY PROPOSAL

Introduction to the Problem

It was James Thurber who once pined that "'A nation in which a congressman can seriously ask, 'Do you think the artist is a special person?' is a nation living in cultural jeopardy'" (Kilgore, 1989, p. 107). Legal critics have long argued that the work of U.S. artists is not well-protected (from mutilation, etc.) by American copyright law. This is especially true for film artists, whose works have been denied protection through the "works for hire" doctrine (an employer retains all rights in the work produced [Nimmer & Nimmer, 1992]). Recent congressional attempts to provide moral right protection for film artists have either been defeated or have excluded motion pictures (Pub. L. No. 101-6540, 104 Stat. 5089 [1990] [Judicial Improvements Act of 1990]).

With the explosion of new communications technologies, filmmakers are increasingly finding their works altered by production companies/producers (the copyright holders) through processes such as colorization, pan-and-scanning, lexiconing, editing, and digital manipulation (McNally, 1990). New HDTV technologies promise even greater potential for manipulation of film/video (Schaefer and Atkin, 1991; Tanaka and Thorpe, 1991). Filmmakers charge that these alterations substantially change the meaning of the work, lessening its impact and placing their reputations in jeopardy. The film/television industry is an important source of export revenues, accounting for a trade surplus of more than one billion dollars (Wildman, 1991), yet most filmmakers are not consulted about these alterations (during the colorization process, for example, video copies of black-and-white films are "colored" using computer animation; these are then distributed to broadcast television and video retail/rental outlets [Penn, 1990]).

The U.S. recently joined the international Berne Convention to gain increased global copyright protection (Merriman, 1991; Public Law 100-568, 102 Stat. 2853 [1988] [Berne Convention Implementation Act of 1988])--and Berne requires that member countries legally recognize filmmakers' moral right to claim authorship ("paternity") of their work and to prevent its destruction/mutilation ("integrity"). But how can this be accomplished within the constraints of the U.S. copyright system and its "works for hire" doctrine, which assign all such rights strictly to copyright holders?

The French court, which emphasizes the "dualist" nature of copyright, may provide an answer. This paper examines two prominent theoretical perspectives used to debate moral rights, then proposes a practical, "dualist" U.S. policy that would allow for implementation of these rights for filmmakers within the existing U.S. system. This argument assumes that all concerned parties (filmmakers and producers) desire maximum financial return from films.

Two Theoretical Perspectives on Moral Rights

Although there has been a great deal written recently on the moral rights of artists in the U.S. (Casey, 1991; Cooper, 1991; Ginsburg and Sirinelli, 1991; Gorman, 1991; Kaufman, 1991; Karlen, 1991; McNally, 1990; Tanenbaum, 1991; and Zuber, 1992), little of this literature focuses on pertinent theory. A few authors, however, highlight two theories which provide a useful perspective on the moral rights debate.

Personality Right

According to this theory, both moral (authorship) rights and copyright (proprietary/economic rights) are extensions of the personalities of those with vested interests in the creation of an artistic expression. Streibich (1975; 1976) argues that the authorship right precedes the copyright since the author-creator must own the work (copyright) before he/she can assign it to someone else.

This right was affirmed in Western cultures by Hegelian/Renaissance philosophy (King, 1991): the author-creator was self-owned and, thus, owned property; thus, he was the first owner of property created by him, including art. Art represented an "extension" of the author-creator's personality, and retained this special significance even after the copyright/proprietary right had been assigned to another person/entity. This "[moral right] has always existed and was not created...but merely recognized" (Streibich, 1975, p. 68). Berg (1991) notes that:

> [s]ubstantive analogues for "moral rights" of paternity and integrity existed in the classical, medieval, and Islamic cultures of Europe.... Greek and Roman society...[developed] a moral injunction against wrongful attribution....The Roman crime of stealing a human being, plagium, was first applied to literary "theft." (pp. 357-358)

This "moral/personality right" can be found in two concerns of early Western culture: (a) plagiarism and (b) royal/religious censorship (Streibich, 1975). An oft-cited example of manuscript plagiarism around the time of Christ was the poet Martial's chastisement of Fidentinus:

> It is said, Fidentinus, that in reciting my verses you always speak of them as your own. If you are willing to credit them to me, I will send them to you gratis. If, however, you wish to have them called your verses, you had better buy them. (Streibich, 1975, p. 6)

Other examples are found in the literature. A disgruntled author accused St. Columba of Ireland (c. mid-500s) of stealing important literary works for preservation by the church. Also, the Rabbinical Council of Venice gave Salamon Rossi of Mantua the "first documented moral copyright" in 1623, threatening infringers with "the curse of the serpent's bite" (Streibich, 1975, p. 15).

The church institutionalized "authorship rights," and, at the same time, wrestled these rights away from authors through the practices of (a) granting the official "imprimatur" (right to copy) to authors and (b) "censoring" inappropriate works by placing them on "the index" (Streibich, 1975). These mechanisms sowed the seed for later "personality rights" conflicts between book publishers and author-creators. These conflicts of "will" were agitated by (a) the invention of the Western printing press around 1440, which promoted relatively quick/easy copying, and (b) the promotion of individualist philosophies after the protestant reformation (mid-1500s). As the secular book trade flourished, scribes/printers tightened their grip on publication through "letters-patent" copyrights (Streibich, 1975).

A patchwork of regional royal and religious patent systems developed, but was later replaced by national copyright systems, beginning in 1710 with the British Statute of 8 Anne. This statute more evenly balanced the interests of authors and publishers by giving author-creators (a) common-law protection for unpublished works and (b) statutory protection for published works (including the requirement that the publisher give the copyright back to the author-creator after a limited number of years; he could then renegotiate for a second term, at an increased price; after the second term, the work would move into the public domain [Streibich, 1976]).

In the U.S., copyright law was modeled on the Statue of Anne until the 1976 Copyright Act revision. This revision eliminated the statutory, 28-year reversion of the assigned copyright to the author-creator in favor of a "life-plus-fifty years"/"permanent" assignment (although it still retained an optional termination of the copyright between the 35th and 40th year after its assignment; see Johnston, 1978).

Critics contend that this system clearly reasserted the interests of the publisher over those of the author-creator.

Contemporary influence of personality theory on U.S. copyright law.

The impact of "personality theory" on U.S. copyright law has been substantial. Damich (1988) argues that all "causes of action" available to author-creators today--contract, unfair competition, privacy, defamation, and the doctrine of waste--are based on the underlying theory of personality rights:

> Despite the fact that the various [remedies] which have been invoked to provide some protection for personal rights may *individually* [italics in original] be inapt [sic] for generating substantial protection, some of them point to a more basic principle, the right of personality, from which substantial protection can be logically derived in the time-honored tradition of the common [law]... (p. 95)

"Privacy law," for example, is clearly grounded in the "personality" of the individual, and Damich notes it remained "unrecognized" until Warren and Brandeis' classic treatise verified it in 1890.

Perhaps the most scathing critique of personality theory comes from recent critical legal theorists, who objected to its use as a justification for the protection of the property rights (copyright) of bourgeois publishers rather than the "personal" rights of author-creators. French legal scholar Edelman (1979) argued that the theory demonstrates circular reasoning typical of ruling class interests--the Law "creates" the legal subject who, in turn, respects the Law. The assumption of the individual "personality" is based upon a social system which interpellates (questions) individuals as legal subjects before the Law; individuals freely create works ("property") protected by the Law using rights they have been assigned. He demonstrates this system's protection of landed interests by pointing at the brief hesitation and confusion which French jurists experienced when first confronted by the technology of the photograph. In the late 1800s, the French courts first defined it as an authorless, automatic reproduction of reality (a first, "gut-level" reaction). Then, bowing to economic pressure, they later defended it as an author-creator guided interpretation/"imprint" of reality which could be copyrighted by publishers. In Hirst's (1979) introduction to Edelman's The Ownership of the Image (the French title is The Law Caught By/Seized By Photography), he argues that this proved that the courts were quick to assert the dominance of art by economic interests. Gaines (1991) reinforces the criticism that, through U.S. copyright law, the personality/moral rights of author-creators are subordinated to the economic interests of production companies and publishers.

Streibich (1976) is not so pessimistic, through, and concludes that moral rights of the artist based on "personality theory" will continue to be increasingly recognized by the courts:

> [A]ll the moral rights have not been recognized or even determined at this time. Rather, they will be discovered and revealed in the future by fertile legal minds and accepted by progressive courts in the continuing determination of intellectual property rights, both in American and in foreign courts. (p. 73)

Thus, the "personality theory" can be seen operating in the development of moral rights in Western cultures. Author-creators in early Greek and Roman times asserted ownership of their ideas/works; the church/publishers claimed ownership of early versions of the "copyright" in the middle ages; national copyright systems based on Hegelian metaphysics gave back to author-creators some control over their works in the 1700s; and current copyright law has been revised once again to emphasize the corporate ownership of intellectual property.

Gift Theory

Another theory useful for understanding the conflict over the ownership of art is gift theory. Berg (1991) argues that early Greek/Roman preoccupation with literary theft/censorship pointed to a concern for the protection of a culture's artistic "heritage"--a "collective, cultural imperative" rather than a "personality right." Berg uses gift theory to explain the conflict between author-creators and copyright holders as one which pits the cultural heritage of society (protected by the author-creator) against the selfish, financial interests of the copyright proprietor.

Berg (1991) bases much of his argument for artistic moral rights on the writings of Lewis Hyde. In *The gift: Imagination and the erotic life of property* (1983), Hyde argues that a "gift economy" is fundamentally different from a commodity-based Western Capitalist economy. First, it is based on a circular arrangement of give-and-take rather than barter; an object (art, for example) is passed between two or more people, accompanied by an expectation that some kind of reciprocal/"return" gift will flow back to each giver at some future time (each receiver, in essence, is unable to eliminate his/her indebtedness until having returned/passed on a gift). Second, the receiver determines the value of the reciprocal/"return" gift (without coercion from the previous giver). Third, the reciprocity is "positive," that is, it *follows* the gift rather than precedes it (unlike commoditization, where "mark-up"/"interest" is included beforehand in the "price" of the item). Fourth, the exchange creates an emotional bond between giver and receiver which is not possible in commodity exchange. Fifth, a gift loses its value if "hoarded" (the circle is destroyed). And sixth, the giver loses control of the gift once it is given away; several native American tribes include the destruction of the gift as part of the exchange ritual.

One of the theory's most influential proponents was Marcel Mauss, a French anthropologist who studied manifestations of "gift exchange" in "archaic" cultures--Melanesia, Polynesia, and North American Indian societies, among others. Mauss (1967) argues that gift exchange is based on *moral* rather than economic principles, and notes that "[i]t is only our [cold, calculating] Western societies that quite recently turned man into an economic animal" (p.

74). He suggests that conscious nurturing of gift tendencies in contemporary culture would lead to a "wiser" society; art work should be considered as "products of the collective as well as the individual mind, and hence to be public property" (Mauss, 1967, p. 65).

Thus, Hyde argues that art is a "cultural gift" offered to society which must be "circulated." He points out that many artists do not work for financial gain, but rather to provide objects of "beauty"/contemplation. In return, they are rewarded with patronage or other forms of recognition. Since art and commodities have a fundamental difference--art is an emotional gift (offering insight, unique experience) whereas a commodity is based on a rational process which alienates giver and receiver, producing no emotional exchange--any "commoditization" of art reduces/destroys this emotional exchange.

Hyde examines the lives of two poet-authors--Whitman and Pound--to demonstrate art as cultural "gift-giving," but then criticizes gift exchange for leading to provincialism ("us vs. them" conceptualizations) and fascism (those who practice the "hoarding" of gifts/value must be removed from the circle and/or destroyed by the maintainers of the social structure). He documents Pound's fervent allegiance to the Fascist powers during World War II under the mistaken belief that, through them, art would be truly communal. Ultimately, Hyde concludes that "gift culture" and "commodity culture" must be reconciled:

> I still believe that the primary commerce of art is a gift exchange, that unless the work is the realization of the artist's gift and unless we, the audience, can feel the gift it carries, there is no art; I still

> believe that the gift can be destroyed by the marketplace. But I no longer feel the poles of this dichotomy to be so strongly opposed....there is little to be gained by a wholesale attack on the market. We can sometimes limit the scope of its influence, but we cannot change its nature. The market is an emanation of logos, and logos is as much a part of the human spirit as eros is. (p. 273)

This important indictment of gift theory as a basis for authorship/moral rights in art escapes Berg (1991). He ultimately asserts that "gift theory" can be used to promote an "ethic of care [that] would seem to provide a more comprehensive way of formulating the interest protected by moral rights" (p. 372): "owners" of art should simply be "custodians." Many filmmakers use a derivative of this argument in defense of the position that moral rights should be extended to filmmakers: a film represents part of the country's "cultural heritage," and any alteration of film jeopardizes that heritage (Congress, 1990).

Theoretical Summary

When comparing personality and gift theories as a basis for an argument in support of moral rights for U.S. filmmakers, one must acknowledge that U.S. case law would more naturally favor policy derived from the former for several reasons. First, although "gift theory" postulates a culture in which author-creators could theoretically thrive, the theory provides no satisfactory answer for the central problem posed in this paper--the dilemma faced by a filmmaker who's work is intentionally defaced (e.g. colorized) by others. In a gift culture, the artist would lose control of the work after it is "given away"; if it were destroyed, the filmmaker would have no legal recourse. The destruction of the work would be part of the ritual of the gift exchange; for example, Mauss (1967) points out that wealth is destroyed by North American Kwakiutl Indians during their gift-exchange "potlatches."

Second, the notion of "gift exchange" as a "goodwill" expression of the giver has been seriously challenged in recent times by social exchange researchers. Cheal (1988) notes that further study has demonstrated that gift giving can be perceived as "a process of exchange through which individuals rationally pursue their self interests" (p. 7). Often, there are strong personal motives for giving (e.g. the exchange of Christmas/wedding gifts maintains social power relations between givers and receiver; givers expect the receiver to offer return gifts at some future time; the receiver remains indebted to the givers until return gifts are offered). Gilmore (1991) found that gift giving between men in rural Anadalusia was part of a ritual essential to peer acceptance.

Third, and perhaps most importantly, U.S. legal practice is currently based on the principle of private property as an extension of the "will/personality" of the owner rather than as an exchange of "gifts." This approach, however, creates a dilemma, since at least two "wills/personalities" are in conflict regarding the "ownership" of motion pictures. Is it possible to reward both, or should one predominate?

This paper will now compare how French law, after being "caught/seized" by photography, redefined intellectual property in order to appease both interests--the author-creator and the economic copyright proprietors--retaining important rights for both. This legal tour de force became the basis for the Berne Convention's moral rights provision for motion pictures (which the U.S., in principle, has agreed to) and provides an important lesson for U.S. lawmakers now struggling with the issue of moral rights for filmmakers.

Dualism, Monism, and the Property/Moral Rights Debate

Whale (1971) provides a useful analysis of the difference between French and British recognition of authorship rights. He labels the French legal recognition of separate proprietary/copyright and moral/authorship rights as "dualist." It allows both sets of ownership rights to assert separate claims: the copyright proprietor is able to reap all financial benefits from selling copies of the work; the author retains control over the nature of the copies produced. Each "personality" is seen as a "specialist" in his/her own area of expertise (exploitation or creation), *resulting in the best possible use of the work.* The system is most flexible, able to accommodate both sets of demands/needs. The proprietary copyright is fully assignable; the authorship/moral rights are perpetual (passed on to heirs), inalienable, and non-assignable.

Whale notes that a "monist" system recognizes only one party's rights. In Germany, for example, the author's rights are dominant. Both proprietary copyright and authorship/moral rights emanate from the author-creator. Under this system, opportunities to exploit artistic work are much more limited than under a dualist approach. Likewise in the U.S., where films are considered "works for hire," the proprietary copyright interests override all other concerns when decisions about alterations of the work (e.g. colorization) are made.

Whale notes that feverish debates between French and German scholars over these approaches occurred during the mid-1800s. Finally, the French approach won out and was formalized at the Berne Convention in Switzerland in 1886 (Wooten, 1991). However, French courts continued to refine moral rights until 1971, when the current "moral rights" clause--Article 6bis--of the Berne Convention was amended.

The original French conception of *droit moral* (moral rights) provided several "protections" for the author, including the right to: (a) create, publish, or withdraw the work; (b) protect the work from excessive criticism; (c) protect the reputation of the artist; (d) assert the author's claim to paternity of the work; and (e) maintain the integrity of the work (from distortion, mutilation, and the like) (Casey, 1991). These have now been refined to two: the right to (a) claim paternity and (b) protect the integrity of the work (Article 6bis of the Berne Convention [Wooten, 1991]). The Berne rights are perpetual, existing without formal registration, and non-waiveable (Ginsburg and Sirinelli, 1991).

As far as "works for hire"/"collective works" are concerned, there are important differences between American and French perspectives. Although a detailed examination of this concept is beyond the scope of this paper, U.S. law specifically defines "works-for-hire" as those:

> "prepared by an employee within the scope of his or her employment; or...specially ordered or commissioned for use as a contribution to a collective work, as a part of a motion picture or other audiovisual work, as a translation, as a supplementary work, as a compilation, as an instructional text, as a test, as answer material for a test, or as an

> atlas, if the parties expressly agree in a written instrument signed by them that the work shall be considered a work made for hire. (Epstein, 1992, p. 197).

French law, on the other hand, logically extends recognition of the "imprint of personality" to any artistic medium--individual or collective (as begun in the late 1800s with still photography). There are no exemptions for "types" of work: any and all original works are covered, including individual artist's "expressive" contributions to collective works such as films. Since an "author" can only be "the actual physical person who created the work" (Ginsburg and Sirinelli, 1991, p. 147), this excludes corporate entities or others who may have provided money/materials. Key film artist-creators who make substantial "expressive" contributions to the film are recognized as co-authors; these are the artists responsible for "[the] scenario, adaptation, dialogue, musical soundtrack...and the director.... cinematographers or set designers" (Ginsburg and Sirinelli, 1991, p. 149). The law does not immediately recognize morals rights for all contributors to a film; others not named above would have to prove that the work "manifested [his/her] personal intellectual creation, rather than purely technical contributions made under the director's orders" (Ginsburg and Sirinelli, 1991, p. 150). The implication is that only major personal "expressions" are recognized as being the work of co-authors, while more "instrumental"/"technical" contributions do not warrant moral rights protection. Thus, any American film co-author whose work is altered in France can be granted a moral rights judgement without ownership of the proprietary copyright (as in the John Huston case; see below).

Berne does not exempt "works for hire" or "collective works" from moral rights protection; in fact, Article 14bis specifically states that a "cinematographic work shall be protected as an original work [Cooper, 1991]," not as a derivative work or adaptation. Yet, member nations can easily bypass this. Berne allows each signatory nation to implement the provisions through endogenous legislation. The ease of eluding Berne while remaining a member is addressed by Marvin (1971) who, in discussing British law (which, like the U.S., provided for moral rights only through already-existing common-law and statutory provisions such as defamation), noted that "in the 20 years since the Convention provision had been accepted no other Berne Union country had complained that the United Kingdom had failed to discharge its obligations under [Berne]" (p. 678). Still, Jacobs (1993) points out that the clear majority of Western European countries have adopted "civil law" protection that clearly recognizes author's moral rights; only the U.K., Ireland, and the Netherlands favor monistic, "economic" moral rights provisions.

American Moral Rights

Like French and British law, U.S. courts resolve conflicts that arise from the opposition of "personalities/wills" by weighing claims and awarding the case to the personality with the "best" claim (Gaines, 1991). But unlike French law, U.S. lawmakers have resisted a dualist "leveling of the playing field" between corporate copyright proprietors and author-creators in cases of moral rights conflicts. Since the corporate proprietor has generally "invested" more financing than the artist in the production of copies of the work, its "will/personality" usually wins when the author-creator objects to alteration of the work through the production of copies (as in recent claims against colorization).

By ignoring the judgement of the film author-creator, copyright proprietors may in fact jeopardize their own financial livelihood by placing inferior "products" on the market. Sherman and Dominick's (1988) survey of television viewers indicates that colorized segments of films were perceived as slightly "less potent" than black and white versions, suggesting "that colorization takes away the sharp edges from an image, blurring it, making it less distinct, if not less real" (p. 980). McNally (1990) notes that after the initial "novelty" interest in colorized movies on television wore off, ratings for colorized films dropped. In the 1990 moral rights hearings before a House subcommittee, Louis Fogelman of the Video Software Dealer Association admitted that black and white versions of films rent as well as colorized versions.

Despite the fact that many legal commentators agree that U.S. law exhibits a monist bias towards protection of the proprietary rights of copyright owners rather than the authors (Cooper, 1991; Gaines, 1991), Berg (1991) asserts that it has "dualist" leanings, presumably because of several provisions for "personal protection" found within it, like "fair use" and "first sale". However, the legal structure protects the economic interest to a much greater degree. Casey (1991) attributes this "economic copyright bias" to British common law, where the perspective of art as "property" developed as a defense mechanism against the tremendous artistic achievements of continental Europeans during the Renaissance. Gaines (1991) demonstrates repeatedly in U.S. law that rights of author-creators are submerged below the property interests of studios and producers (e.g. the star contract of the

1930s and the Nancy Sinatra lawsuit).

This biased protection of property interests can be further demonstrated by an examination of (a) legislative action (or inaction) and (b) case law.

Legislative Action (or Inaction)

Zuber (1992) points out that passage of U.S. moral rights legislation came after years of debate and disappointment. Congress repeatedly declined to join the Berne Union because of its moral rights provision. Domestic moral rights legislation was defeated in 1940, 1977, 1979, 1981, 1986, and 1987. Specific moral rights provisions were excluded from the 1976 Copyright Act revision.

Like the British, the U.S. Congress eventually decided that existing contract, defamation, unfair competition, and privacy laws already provided adequate "moral rights" protection and became a signatory to the Berne convention in 1988 (Kaufman, 1991; Marvin, 1971; Nimmer & Nimmer, 1992) . Although U.S. case law clearly showed that these regulations were deficient in providing Berne-level moral rights--especially for unknown artists who did not own the proprietary copyright in their works--the Berne Convention Implementation Act was carefully worded so as not to increase U.S. moral rights protection (Casey, 1991):

> "[this Act does] not expand or reduce any right of an author of a work, whether claimed under Federal, State, or the common law--1) to claim authorship of the work; or 2) to object to any distortion, mutilation, or other modification of, or other derogatory action in relation to, the work, that would prejudice the author's honor or reputation." (Public Law 100-568, 102 Stat. 2853 [1988] [Berne Convention Implementation Act

of 1988], pp. 1-2)

Still, the subsequent passage of the Visual Artists Rights Act in 1990 was an important step for moral rights protection in the U.S. It clearly demonstrated that U.S. legislation was slowly evolving toward a dualist protection of authorship rights pioneered by the French courts and codified in Berne. It expressly protected "works of visual arts....painting, drawing, print, or sculpture....a still photographic image produced for exhibition purposes only" against mutilation if they were of "recognized stature" (Casey, 1991, pp. 428-429). However, the act exempted all works made-for-hire, including "motion pictures and other audio visual works, posters, maps, globes, charts, technical drawings, diagrams, models, applied art, books, magazines, newspapers, periodicals, data bases, electronic publications or similar publications, and merchandizing items" (Casey, 1991; VARA, 1990). Also, the VARA provided that moral rights could be "waived" by an artist through a written statement and were only in effect during the life of the artist. Critics have argued that this "waiver" clause essentially nullified the act since many artists were not popular/marketable enough to insist on protection for their works when negotiating with corporate copyright proprietors (Vaver, 1991).

Nonetheless, VARA was instrumental for two reasons. First, it recognized for the first time that "moral rights" were held by an artist separately from economic rights. Second, it expressly provided for the rights to paternity (authorship) and integrity (right to object to a mutilation or deformation of the work) (Casey, 1991, p. 87).

But how about the filmmaker/artist? Perhaps one of the loudest debates during the VARA hearings was whether motion pictures should be given moral right protection. Filmmakers (directors, writers, etc.) strongly supported this proposal, while the Motion Picture Association of American (MPAA) and other organizations representing studios and owners vehemently lobbied against it (Congress, 1990).

The exclusion of motion pictures in the VARA was one of two major blows to filmmakers during the late 1980s. In 1987, the Film Integrity Act, introduced by Representative Gephardt of Missouri, was resoundingly defeated. It "sought to amend Title 17 [of the Copyright Act of 1976 so that a]...motion picture could [not] be 'materially altered' without the written consent of the 'artistic authors' of the work" (Cooper, 1991, p. 468).

One consolation for filmmakers could be found in the 1988 passage of the National Film Preservation Act, which provided for the selection of seventy-five "all-time classic" films to be preserved by the Library of Congress (McNally, 1990). This Act, though, provided no moral rights for artists and protected only a relative handful of films.

U.S. Case Law

The primary argument that U.S. law already provided significant moral rights protection before joining Berne is not demonstrated by a study of relevant case law. It is clear that U.S. courts favored economic rights in litigation, especially when artists tried to block mutilation of work. Despite rhetoric to the contrary (Kaufman, 1991), contract, defamation, unfair competition, and privacy law traditionally provided no moral rights relief except for the few artists who owned the copyright to the work. These cases provide illumination on how the courts have generally treated artists.

In Shostakovich et al. v. Twentieth Century-Fox Film Corporation (80 N.Y.S.2d 575 [1948]), Russian music composers Shostakovich, Prokofieff, Khachaturian, Miashovsky lost an injunction against the film company for its use of their music in an anti-Soviet spy film called The Iron Curtain. The plaintiffs had charged that the use was libelous (it damaged their reputation by associating them with a non-patriotic work) and in violation of Civil Rights Laws (it violated their moral rights).

In Crimi v. Rutgers Presbyterian Church (98 N.Y.S.2d 813 [1949]), the New York Supreme Court found that the painter Crimi did not have "moral rights" when a fresco he painted for a church was covered. The court rejected Crimi's attempt to apply the European moral rights law to American law, noting that "the claim...that an artist retains rights in his work after it has been unconditionally sold, where such rights are related to the protection of his artistic reputation, is not supported by the decisions of our courts" (p. 819). The church had "hired" Crimi with a "service contract," paid him, and retained the copyright in the contract.

In Otto Preminger and Carlyle Productions, v. Columbia Pictures Corporation and Screen Gems, Inc. (267 N.Y.S.2d 594 [1966]), director Preminger was unable to keep Columbia pictures from editing his film Anatomy of a Murder for insertion of commercials for television broadcast. Preminger argued that it detracted from the film's artistic quality, damaged his reputation, destroyed the film's commercial value, injured his business, and falsely presented the film to the public. The court noted that Preminger's Columbia contract did not contain a television "editing right."

In Theodor Seuss Geisel v. Poynter Products, Inc. et al. (295 F. Supp. 331 [1968]), "Dr. Seuss" Geisel lost an injunction against Poynter Products, Inc. to stop it from marketing a series of dolls based on his early drawings. The court recognized Poynter's right to make/sell the dolls as derivative works and that there was no unfair competition or intent to damage Geisel's reputation (he claimed the dolls were poorly made).

In Margaret M. Landon v. Twentieth Century-Fox Film Corporation (384 F. Supp. 450 [1974]), Landon lost a suit against Twentieth Century Fox for defamation, invasion of privacy, misappropriation of literary property, and wrongful attribution of work to her. The company had produced what she considered a "poorly made" series based on her book "Anna and the King of Siam" (which had been the basis of the movie and Broadway hit The King and I).

The only case in which film artists successfully stopped mutilation of their work was Gilliam et al., v. American Broadcasting companies, Inc. (538 F2d. 14 [1976]). Members of a British comedy troupe won an injunction against a planned ABC network airing of edited BBC Monty Python Flying Circus episodes. The troupe argued that ABC substantially altered the content/meaning of the episodes. Since the BBC contract gave the group (a) the right to approve all major alterations in the scripts/derivative works (the television show) and (b) the copyright to the works, the court found for the plaintiffs.

French Case Law

Because of the dualist separation of economic copyright interests and author-creator moral rights, the courts see both as important, recognizing perpetual and non-waiveable moral rights for domestic and international artists in every medium.

Two cases relating to film clearly demonstrate this. In both, the artists involved did not own copyrights to the work. First, in Shostakovich et al. v. Twentieth Century-Fox Film Corporation (same case as was tried in the U.S,; Casey, 1991), the French courts found that the Russian music composers Shostakovich, Prokofieff, Khachaturian, Miashovsky had moral rights to their work and that their reputations were damaged by the use of their music in the anti-Soviet spy film The Iron Curtain.

Second, in Huston v. la Cinq (Channel 5) in France, (1991) (translated in Ginsburg and Sirinelli, 1991), the French Supreme Court (Cour de cassation) found that the heirs of film director John Huston and a screenwriter could sue for an injunction against the French television channel and Turner Entertainment because of their planned airing of a colorized version of Huston's The Asphalt Jungle.

U.S. Moral Rights--a Policy Proposal

By recognizing the influence of "personality theory" on U.S. legal practice, one can observe a slow movement toward the recognition of the moral rights to paternity and integrity of a work for some artists (as in the VARA). However, this evolution is not yet complete. The U.S. does not provide moral rights protection for the author-creators of motion pictures. Films are considered "works for hire." Because the Berne Convention is clear in requiring member countries to recognize these rights, and because film is vitally important to U.S. export trade, the U.S. must ultimately adopt moral rights for filmmakers in order to fully participate in international copyright protection (Tanenbaum, 1991). Thus, to comply with Berne and to complete the evolutionary process of recognizing the personality of the author-creator in motion pictures (and other "works-for-hire"), the following proposals are made for amendment of the Copyright Act of 1976:

(a) the guarantee of author's rights to paternity and integrity in all works of art and literary expressions, including all "works-for-hire"/"collective works"; since the copyright proprietor retains profits from the sale of copies of work, the threat to his/her economic rights is minimal (as in France, where few lawsuits have arisen; Ginsburg and Sirinelli, 1991);

(b) the elimination of the waiveability of moral rights;

(c) the provision for perpetuity of these rights (beyond the life of the author); and

(d) a dualist provision mandating clear legal separation of the proprietary economic copyrights and the authorship/moral rights invested in all works of art/authorship, including motion pictures.

Conclusion

The French perspective on personality rights in works of art represents a logical evolution from a monist recognition of the "proprietary-economic copyright" to a more sophisticated "dualist" perspective, as found in French case law. Although the U.S. has evolved to the point where it has now enacted moral rights legislation, this legislation is still too limited to truly protect authorship rights of all artists. Moral rights must be guaranteed for film artists. Filmmakers would most immediately benefit from such a policy, although there may be important gains for other authors-creators--like newspaper journalists and photographers. Filmmakers would retain greater control over the ever-increasing technological alterations to films made possible by new, computerized technologies like colorization, digital photography/enhancement, HDTV, etc. By refusing to grant moral rights to film author-creators, the quality of film (art) in the U.S. could stagnate/decline as artists lose both control and interest in their work. Since film represents an important economic contribution to U.S. international trade, author-creators (filmmakers) should be given due recognition and control over the effective/profitable use of these works.

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Computer Literacy, Technology Use and Compact Disc-Interactive: An Exploratory Study

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Paper presented to Communication Technology Interest Group at the 1993 Annual Meeting, Association for Education in Journalism and Mass Communication.

Introduction

Compact Disc-Interactive (CD-I) is a relatively new communication technology that combines text, graphics, sound, animation and video in an interactive format. Software is delivered on a carrier physically identical to an audio compact disc, but must be played on a CD-I machine (though CD-I players can play audio CDs as well as Kodak PhotoCDs).

This study is an evaluation of CD-I and one particular application: *Compton's Interactive Encyclopedia*. *Compton's* was chosen because it is currently bundled with all Philips CD-I machine purchases, because it is of general interest to potential users, and because it is a good example of a large-scale hypertext database (Rada, 1991).

Compton's has two characteristics that take good advantage of the CD-I environment: first, it is interactive, and requires much input from the user. In turn, the user is rewarded with multiple ways of finding information (for example, by time or by topic) and the user can easily move from one article to another, related article, or to a dictionary definition of a particular word. Second, *Compton's* is a multimedia environment, and includes text, pictures, sound, video, and animation. It is a good example of new media, in that it has key characteristics summarized by Rogers (1986): it is digital, it is interactive, and it is asynchronous (i.e., delivered on demand).

A program such as *Compton's* invites comparison with other computerized information resources, and this provides the second purpose of this study: to explore the relationships between technology use, computer literacy, and satisfaction with CD-I and *Compton's*.

The CD-I Platform

CD-I addresses what is currently the biggest obstacle to the development of multimedia: distribution. Computer-based multimedia can be difficult to distribute, as sound and video files make programs so large they can only be distributed on CD-ROM. This problem is compounded by the fact that few computers are currently equipped with CD-ROM readers. Additionally, multimedia developers must keep track of their program's appetite for RAM and hard disk space, the need for a particular program (such as *HyperCard*) to be resident on the destination machine, and whether certain audio and video peripherals are attached.

In contrast, CD-I is multimedia for the masses. The user simply connects the CD-I player to a conventional television, drops in a disc, and hits "play." From that point, the only functional controls are on the hand-held remote, which resembles a cross between a television remote control and a joystick (see Figure 1). The joystick moves a cursor around the video screen, and the user controls the program by clicking one of four buttons surrounding the joystick. Conventional trackball and mouse input devices are optional equipment. All of the computer technology that CD-I uses is hidden from the user. Indeed, there is no keyboard, and there is no need for the user to worry about RAM or other computer concerns. To the casual user, a CD-I player resembles a cross between a VCR and a CD player.

Internally, CD-I players use a Motorola 68000 processor and 1.5 megabytes of RAM (Free, 1989). The discs hold up to 650 megabytes of information. Sound can be recorded at four different quality levels, each with a tradeoff between quality and storage requirements. For example, a disc can hold 19 hours of "narration quality" audio, or 76 minutes of stereo, 16-bit, CD-quality audio. Video resolution is 384 by 280 pixels. A CD-I disc could also hold up to 7,800 photo images, at up to 768 by 560 pixel resolution. With a plug-in cartridge, a CD-I disc can hold up to 72 minutes of VHS-quality full-motion video. It is up to multimedia producers to mix the required elements at the best quality, while making the entire program fit on one disc.

Most of the software titles available for CD-I are either educational or games. Examples of educational titles include *Compton's Multimedia Encyclopedia*, *Time-Life Photography* and an interactive tour of the Smithsonian Institute. Examples of game titles include *ABC Interactive Golf* and *Sargon Chess*. Many corporations are also using CD-I for point-of-purchase kiosks and for internal training (Carlile, 1992).

The Dutch conglomerate Philips is the originator and driving force behind CD-I technology. Philips is well known for developing other successful media formats, including the audio cassette, the compact disc (with Sony) and the laserdisc. These formats have been successful due to a combination of technology, marketing, and standard setting. In each case, Philips has cross-licensed the formats to hardware and software companies, eventually building *de facto* standards based upon marketplace acceptance. While this is the pattern Philips is following with CD-I, there are other CD-based formats available (such as various CD-ROM standards) or planned for release (such as CD games developed by Nintendo or Sega, and Electronic Arts' 3DO system) that will offer stiff competition to CD-I (Waring, 1992; Barney, 1993). Still, CD-I has a good chance to succeed, since it is compatible with audio CDs and Kodak PhotoCD, is out of the gate early, and has a ready-to-run library of software from independent developers.

About *Compton's*

Compton's Interactive Encyclopedia offers the equivalent of a multi-volume encyclopedia on a single compact disc. The user interface is a combination of text and icons, starting with the "home" screen (figure 2). This is the first screen to appear when the disc is played. From here the user has several choices for a finding information: 1) going directly to a full-text article or dictionary definition by using one of the text-finding functions such as Title Finder (figure 3) , Fact Index or Dictionary and typing in the topic by pointing and clicking on the simulated keys of a keyboard screen; 2) browsing by using the more exploratory devices, such as Time Machine (figure 4), Pictures, or Videos; or 3) searching by following topic branches, starting from Topic Tree (figure 5) or Atlas. Also included is a Help screen, which provides brief narrated tutorials on each function.

"Hot keys" link articles to other relevant articles. For example, inside a paragraph on "Airplane" (figure 6) one finds "See Aerospace Industry." The user has only to click on on the arrow icon to call up the "see" reference in full text and click on the Back arrow to return to the previous screen (figure 7). Video and slide show icons allow the user to jump out of the article and watch a video or slide show, complete with audio narration, in those articles provided with video and slide show hot keys. Still photos and diagrams may be called up to full screen and their captions displayed. The definition of any word in the text may be accessed simply by clicking on the word in question.

All screens offer scroll controls, for scrolling and paging through text and images, and one-click access to the previous screen and to Home. Many of the function screens offer access to different media. For example, Videos also contains an icon that calls up a full-text article on the video topic.

Such an interface places the user in an environment where any given topic is available by a number of different paths, both linear and non-linear. As the illustrations indicate, the design and layout of the program is meant to suggest *home* technology or a familiar textbook environment rather than a computer (Windows or Macintosh desktop) graphical user interface.

Study Rationale

While CD-I is slowly diffusing into the general population, we know very little about how people use it. This is true for interactive media in general, not just for CD-I. We know that audiences are conditioned, through years of television and film viewing, to more or less passively absorb media messages. While many have argued that mass media audiences are "active," by, for example, using remote controls to change channels, CD-I and other interactive media demand a *much* higher level of activity. For example, it is not uncommon for a first-time user of CD-I to sit and wait for the machine to offer the next bit of information. Some software titles have even anticipated this "couch potato" phenomenon: for example, the *Sesame Street: Numbers* disc features a gentle audio reminder to the user to do something should there be no input for several minutes. *Newsweek* offers an interactive version of the weekly magazine that features two user modes: one allows interactive inquiry, and the other simply "runs" like a radio or television program. This "bimodal spine" structure accommodates more traditional users who may be hesitant to make interactive choices (Todd, 1993).

Clearly, some users are more "ready" for this technology than others. Among the student population, who were the participants for this study, we considered two hypotheses:

H1. Heavy users of communication technology would have greater satisfaction with CD-I than light users of communication technology.

H2. More computer-literate participants would have greater satisfaction with CD-I than less computer literate participants.

We also examined which features of the CD-I/*Compton's* environment were best and least liked by the participants.

Method

Eighty-five undergraduate students from three different introductory communication classes at a medium-sized midwestern public university participated in this study. Each volunteered to participate, and was given an extra-credit incentive. Fifty-six percent of all participants were Communication majors or potential majors; the rest had majors distributed across the university. The mean age of the participants was 23; 54 percent of the participants were female.

Each participant spent approximately 45 minutes doing the study. Upon arrival the participant completed a pretest which consisted of a technology use index and an index of computer literacy. The participant was then ushered into a small room with a CD-I player running the *Compton's Encyclopedia* on a 13" television. The participant watched the opening credits (approximately 15 seconds) and then was shown the general Help routine. This is a 2.5-minute narrated sequence that shows and explains how to use the remote control and the various features of the encyclopedia. Upon completion, the participant was asked if he/she had any questions, which were then answered by the monitor. The participant was then given the following written instructions:

> America has seen many pioneers of aviation. The 1920s was an era of spectacular achievement in the development of the airplane. In the next 15 minutes, find out as much as you can about important people in airplane history in the 1920s. Use any of the resources available to you in the *Compton's Interactive Encyclopedia*. Choose whichever path or paths to the information that you feel are the most informative and productive. Be prepared to answer a brief series of questions on the topic when you have finished your search. Please, do not take written notes. We are interested in how effectively the program communicates and helps short-term retention of a subject.
>
> The person monitoring the session will alert you when your time is up. Simply work at your own pace and get as far as you can.

After 15 minutes, the room monitor checked on the participant and asked him/her to begin to finish up with the inquiry. Afterward, the participant completed a posttest featuring the following categories of questions: satisfaction with the CD-I/Compton's package, recall questions about airplane pioneers of the 1920s, open-ended questions about the experience, and demographics.

All of the CD-I sessions were videotaped for further analysis. Because CD-I outputs to a conventional television, a VCR was directly connected to the output of the CD-I machine. The resulting tape is of high quality and permits construction of an "audit trail" of each participant's inquiry.

Measures

Technology Use. The pretest asked participants to identify which of 24 communication technologies they use during a typical week. The technologies included home entertainment (such as CD player, VCR), "on the go" (laptop computer, automated teller machine), communication (FAX, E-mail) and computers (mainframe, electronic database). Some additional questions probed skills and behaviors, such as setting a VCR, installing computer hardware or programming a computer. A factor analysis (principal components, varimax rotation) of these items yielded two dimensions of technology use (see Figure 8). One dimension was home entertainment technology users (based upon seven items; alpha = .63) and the other dimension was information seekers (based upon six items; alpha = .41).

Computer Literacy. Gressard and Loyd (1986) developed a computer attitude scale that includes three dimensions: computer at-ease, computer confidence, computer liking. Each dimension has 10 Likert-scaled questions, half of which are reverse coded (see Figure 9). This scale has been used in other studies (Loyd and Gressard, 1986) and validated in a comparative study (Woodrow, 1991). For this study, the at-ease subscale had an alpha of .90; the confidence subscale, .87; and the liking subscale, .88.

CD-I Satisfaction. Twenty Likert-scaled questions probed affective responses to the CD-I hardware/*Compton's* software setup. It is worth noting that some items more directly address CD-I concerns, while others directly address the software. Factor analysis of the twenty questions yielded two dimensions of satisfaction (Figure 10). Information satisfaction was based upon six items (alpha = .85). Modal satisfaction was also based upon six items (alpha = .75).

Results

Technology Use and CD-I Information Satisfaction. On the two technology scales, high and low users were determined by splitting the sample at the median of each technology scale. This data reduction permits the use of one-way analysis of variance for the following analyses.

Table 1 shows that heavy users of everyday technology (listed in Figure 8) were slightly, but not significantly, more satisfied with CD-I information than were light users of everyday technology. Heavy information seekers, on the other hand, reported mean CD-I information satisfaction of 4.0 (on a 1 to 5 scale, with 5 high) while light information seekers reported a mean information satisfaction of 3.5. This difference was significant at the .05 level.

Technology Use and CD-I Modal Satisfaction. Table 2 shows the results of this analysis. There was no statistical difference between light and heavy users of everyday technology, as was there no difference between light and heavy information seekers. Technology use, as operationalized here, fails to predict CD-I modal satisfaction.

Computer Literacy and CD-I Information Satisfaction. Measures of low, medium, and high computer literacy for the following analyses were determined by doing tercile splits on each respective computer literacy scale. The general pattern is that more computer literate participants had higher CD-I information satisfaction than did less computer literate participants (Table 3). For example, those with low computer at-ease scores had a mean CD-I information satisfaction score of 3.4, while those with high computer at-ease scores had a mean CD-I information satisfaction score of 4.0. This difference was significant at the .05 level.

This pattern continues with the analysis of the computer liking scale on CD-I information satisfaction, but the difference between the low, medium and high computer liking groups is not statistically significant.

Table 3 also shows that more confident computer users had higher overall CD-I information satisfaction than less confident users. For users with low computer confidence, the mean CD-I information score was 3.4; for users with medium confidence, it was 3.8; and for users with high confidence, it was 3.9. The difference between the groups was significant at the .05 level.

Computer Literacy and CD-I Modal Satisfaction. Table 4 shows the results of this analysis. None of the computer literacy scales used in this study--computer at-ease, computer liking, or computer confidence--was related to CD-I modal satisfaction.

Software/Hardware evaluation. This analysis reports the highest and lowest scoring items from the posttest that probed for affective responses to the CD-I experience (Figure 11). The top two items have to do with the physical appearance of *Compton's Interactive Encyclopedia:* it was easy to read the text on the screen (4.6 on a 1 to 5 scale, with 5 as the highest score) and the encyclopedia has an attractive layout and design (4.5). Other high-scoring items included a positive response to the sound, pictures and video (4.5), "I would like to spend more time with this program" (4.5) and "The structure of the CD-I encyclopedia encouraged me to browse" (4.4). Participants also indicated relatively strong agreement with "I would favor the CD-I encyclopedia over traditional printed encyclopedias if I had both in my home" (4.2).

The biggest limitation of the CD-I encyclopedia, according to the participants, is the inability to print selected articles on paper (2.0 on a 1 to 5 scale, with 5 as the highest score). Other weaknesses had to do with the quality of the information in the encyclopedia. For example, "If I was doing a paper on the subject, the information in the CD-I encyclopedia would not have been sufficient" scored 3.2, and the statement "I feel the information I got from the CD-I encyclopedia was complete" only scored a 3.3. Two other concerns related to CD-I versus a conventional encyclopedia: "I found more information with the CD-I encyclopedia than I would have using a conventional encyclopedia, given the same amount of time" (3.4); and "It's easier to search a printed encyclopedia than the CD-I encyclopedia" (3.5). A final low-scoring item addressed a key concern to hypermedia developers: "I didn't understand the choices available to me most of the time" (3.5).

In spite of some of these limitations, 78 percent of the participants indicated interest in buying a CD-I player. Participants were also asked to guess the cost of the player; the mean score was $962. The median, less responsive to extreme scores, was $676, fairly close to the current (spring, 1993) street price of about $600.

Discussion

Technology Use and CD-I Satisfaction. There was limited support for Hypothesis 1. Heavy and light users of everyday communication technology--things like remote control TVs, VCRs and personal computers--had about the same overall CD-I satisfaction scores on both information satisfaction and modal satisfaction. While this is contrary to our expectations, it bodes well for CD-I in the marketplace. Philips has tried to position CD-I as a product that all members of the household could enjoy and use. Light technology users--those who one would expect to shrink away from something that demands heavy user input--liked CD-I as much as more active technology users.

The other cluster of technology users, information seekers, did vary on information satisfaction. Heavy information seekers--those who use computerized databases and dial-up services such as Prodigy--had significantly higher CD-I information satisfaction than did light information seekers. It is unclear, however, if this is due to their feeling more at ease in the CD-I environment (which resembles other electronic inquiry environments) or if it is because of the superior implementation of the *Compton's* package. One clue might be contained in the modal satisfaction variable, which had the same scores for both light and heavy information seekers. If *Compton's* is in fact a superior package, it is not--according to our study participants--due to its look and feel. The encyclopedia's main advantage could lie in its multidimensional linking of related articles. Analysis of the study session videotapes may she some light on this issue.

Computer Literacy and CD-I Satisfaction. Two of the three computer literacy scales--computer at-ease and computer confidence--were positively related to CD-I information satisfaction. While the difference was significant, it wasn't very large. Computer liking was not significantly related to CD-I satisfaction. And none of the three computer literacy measures was significantly related to CD-I modal satisfaction.

While a CD-I player is in fact a computer, it appears Philips has succeeded in hiding it. The CD-I platform has similar appeal to participants who are not at all computer literate as well as very computer literate. Several modal characteristics make CD-I seem more like video technology than computer technology. First, it plays on a TV screen, and its remote is very similar to a TV or VCR remote. Second, the lack of a keyboard and the uncluttered front panel make CD-I more inviting to a new user. Third, CD-I plays motion sequences that have the look and feel of video, even if they are often only animated slide shows with synchronized sound. Many CD-I titles, including *Compton's*, also feature opening credits that resemble the credits of a television show.

Hardware/software evaluation. Our participants clearly liked their brief CD-I experiences. The attributes they liked best included the graphic look of the program, the multimedia elements, and the ability to "browse" in many ways. Major weaknesses were the depth and the quality of the information. Indeed, there are many compromises that must be made in fitting an entire encyclopedia with graphics, sound and video on one disc. For example, there are only about 30 video clips for the entire encyclopedia. One could argue that they serve more of a "bells and whistles" function more than as a useful addition to the text information. Another weakness of the encyclopedia has to do with the implementation of the links between articles. All too often, links that should be included are not. For example, in the article on airplane history, there is a mention of Amelia Earhart. While there is in fact a separate article about Earhart, there is no "hot link" direct to that article. All too often, articles are located at the end of a linear path, the equivalent of an electronic dirt road, a dead end. While the front end of the encyclopedia does permit many kinds of associative searches, the deeper one goes, the fewer chances there are to "jump" from one place to another without backing up to a main menu.

Some of these limitations may be due to bandwidth limitations; after all, only so much information can fit in a 650-megabyte carrier. Other limitations may be due to the inexperience of the programmers at Compton's. After all, interactive multimedia is a relatively new field. In 1993, much of the success of multimedia is due to its novelty factor. This makes multimedia something like the movies of the early twentieth century. The technology exists, but a) the authors have little collective wisdom about how to construct texts; and b) the audience has yet to learn the codes of the medium. To further stretch the metaphor, we are waiting for the equivalent of a D.W. Griffith of the multimedia industry to "write the book" on how to organize multimedia texts.

This was readily seen anecdotally by the monitors of the CD-I sessions. The major problems of the participants had to do with either not knowing what to do, or getting "lost." Additionally, most participants chose to use traditional search strategies, such as an alphabetical search. Many participants completed the task easily, however, and then spent the remainder of their time "playing;" i.e., trying out the different features, looking up different topics, and playing the videos.

Most of our participants indicated that they wished they had more time. This is potentially a limitation of this study, since it is hard to get past the novelty effect of a new technology such as CD-I in only 20 minutes. What is not clear to us is how many of those participants really needed more time to complete the task, and how many simply wanted more time to play and explore.

A major limitation of this study is the problem of decoupling the software and hardware, since they were effectively an integrated package to our participants. Further studies should explore other implementations of electronic encyclopedias, as well as modal comparisons between printed and electronic encyclopedias. Further, participants should be able to use the software in question for longer periods of time. This should eliminate some of the novelty effect for new users. After all, it is one thing to "test-drive" a CD-I encyclopedia and enjoy it; it is quite another to live with it as a primary reference on a long-term basis. Also, other dimensions of CD-I software, such as games and children's programs, should also be evaluated.

The unique modal characteristic of CD-I is that it effectively bridges computer and video technology. As this study suggests, this characteristic may make it easier for technophobes to get easy access to computer-based media.

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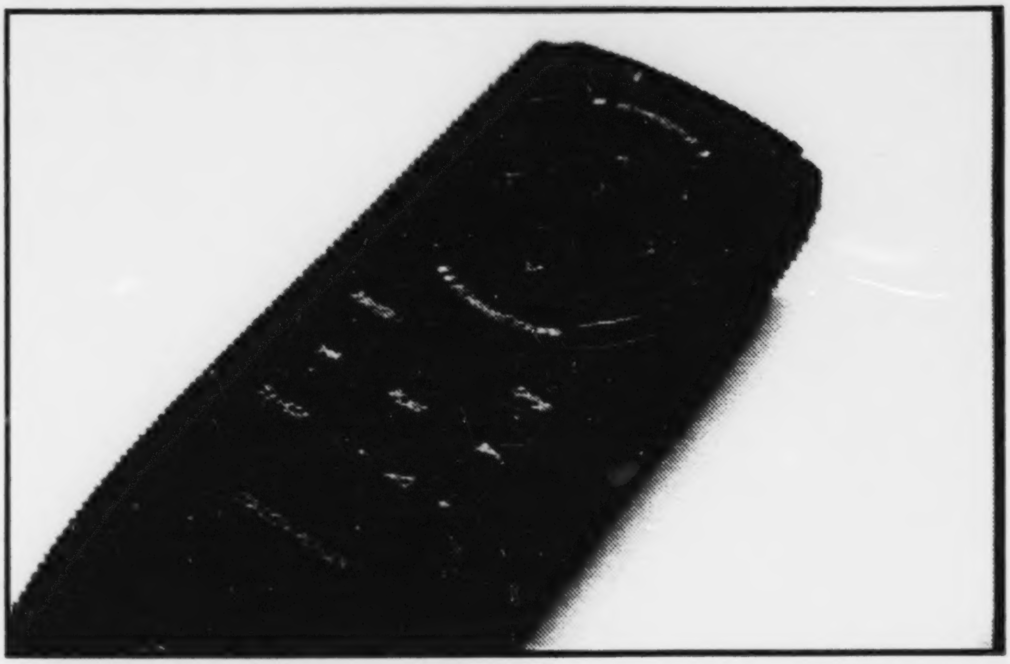

Figure 1
The Philips CD-I Remote Control

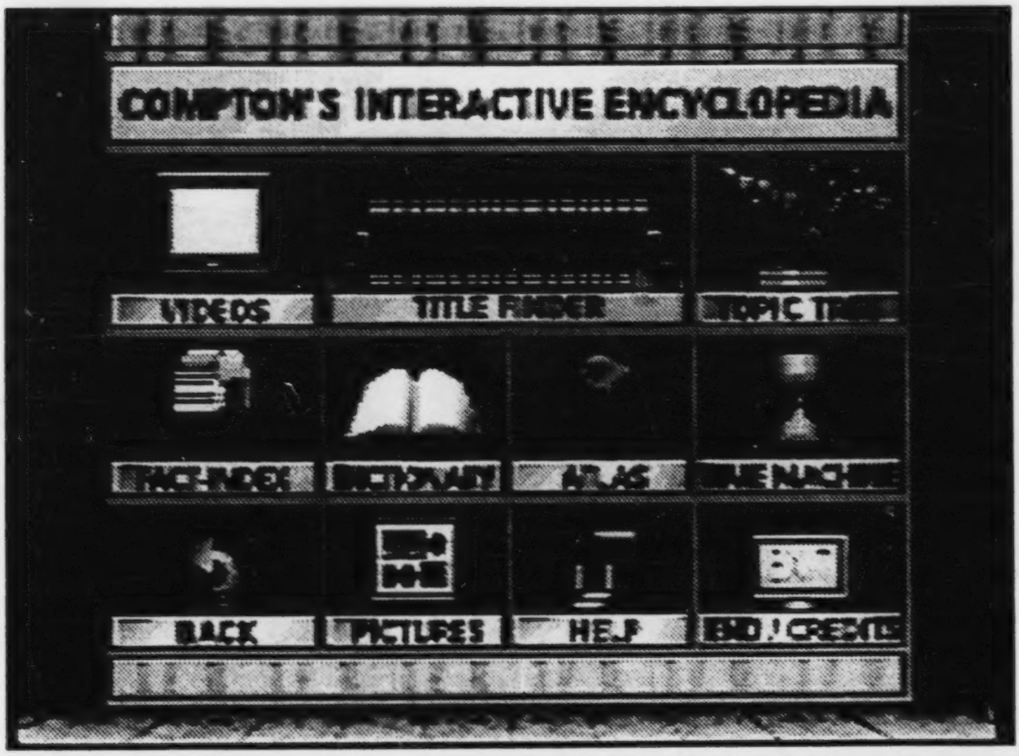
COMPTON'S INTERACTIVE ENCYCLOPEDIA
VIDEOS
TITLE FINDER
TOPIC TR
FACT-INDEX
DICTIONARY
ATLAS
TIME MACHINE
BACK
PICTURES
HELP
END / CREDITS

Figure 2
Compton's Interactive Encyclopedia
The "Home" Opening Menu

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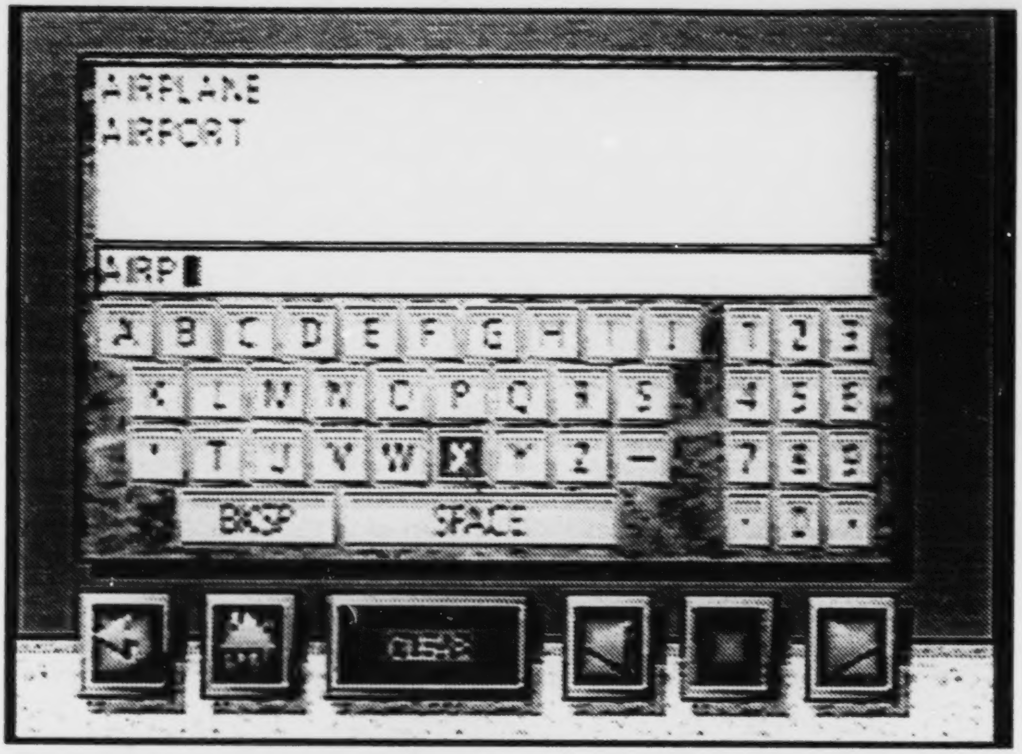

AIRPLANE
AIRPORT

AIRP

A B C D E F G H I J 1 2 3
K L M N O P Q R S 4 5 6
T U V W X Y Z — 7 8 9
BKSP
SPACE
0
CLOSE

Figure 3
The Title Finder uses a simulated keyboard.

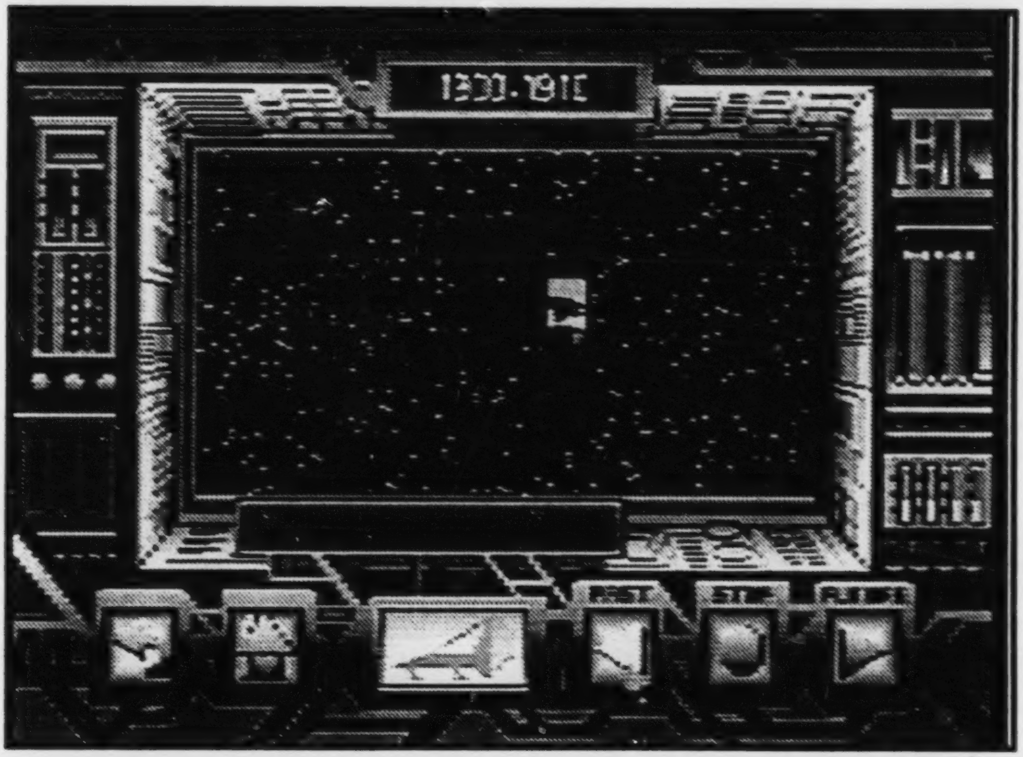

Figure 4
Time Machine offers a table of selected topics significant to each decade.

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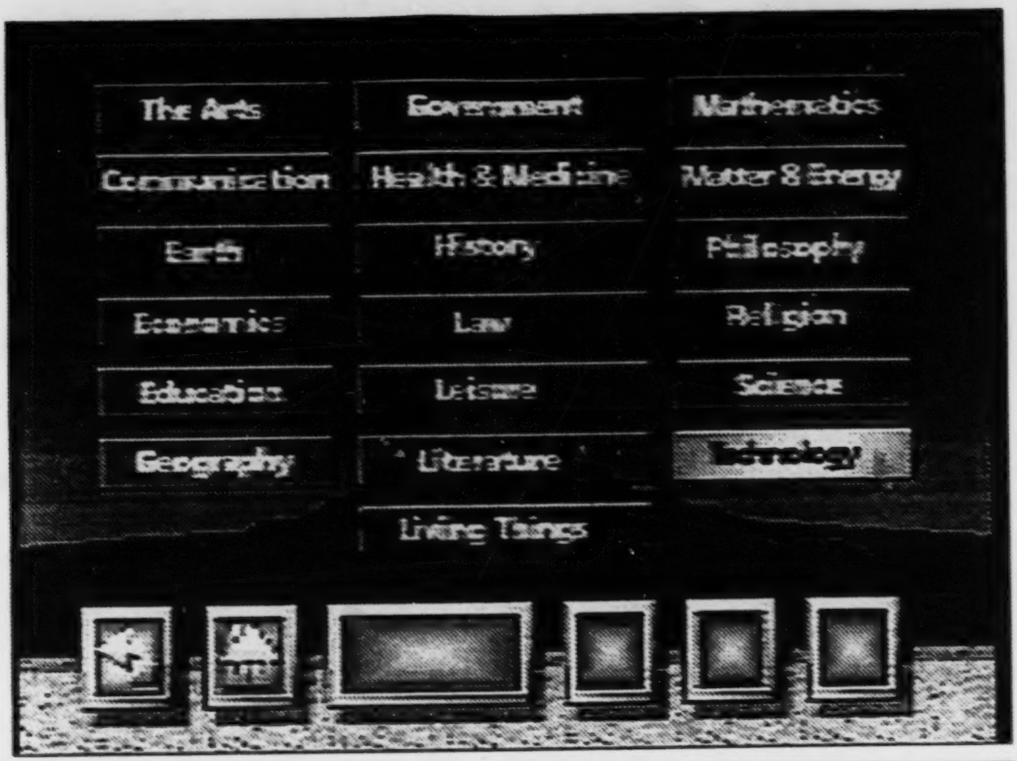
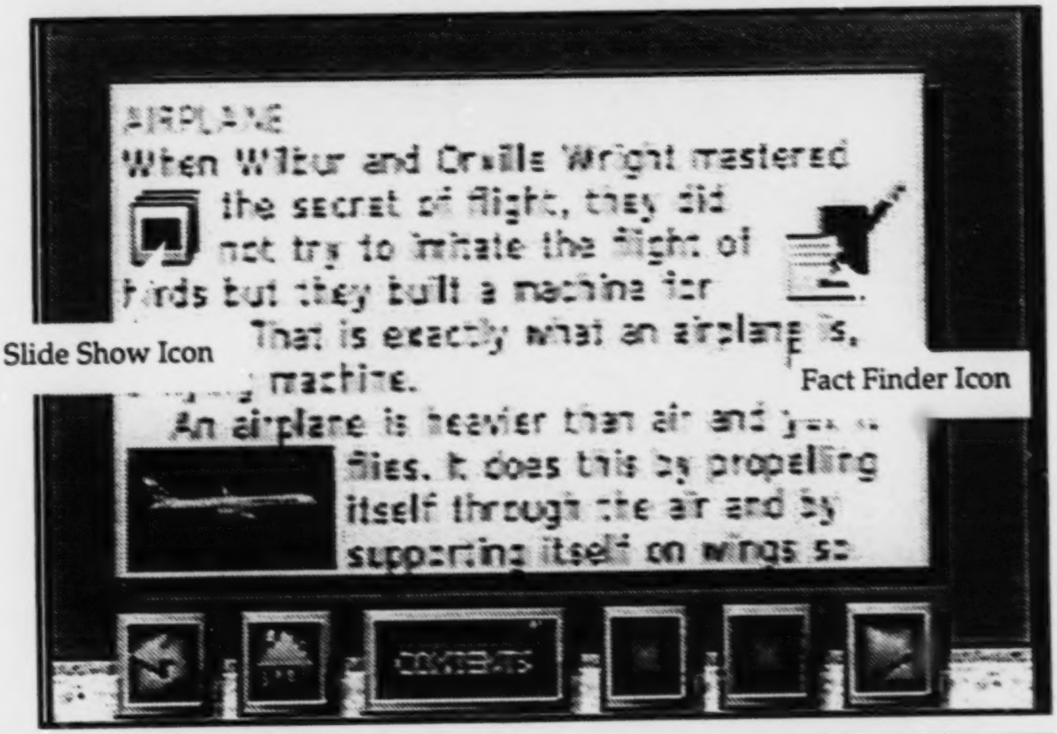

The Arts
Government
Mathematics
Communication
Health & Medicine
Matter & Energy
Earth
History
Philosophy
Economics
Law
Religion
Education
Leisure
Science
Geography
Literature
Technology
Living Things

Figure 5
The Topic Tree accesses tables of contents for each subject.


AIRPLANE
When Wilbur and Orville Wright mastered the secret of flight, they did not try to imitate the flight of birds but they built a machine for … That is exactly what an airplane is, a flying machine.
An airplane is heavier than air and yet it flies. It does this by propelling itself through the air and by supporting itself on wings so

Slide Show Icon

Fact Finder Icon

Figure 6
A Typical Article Screen

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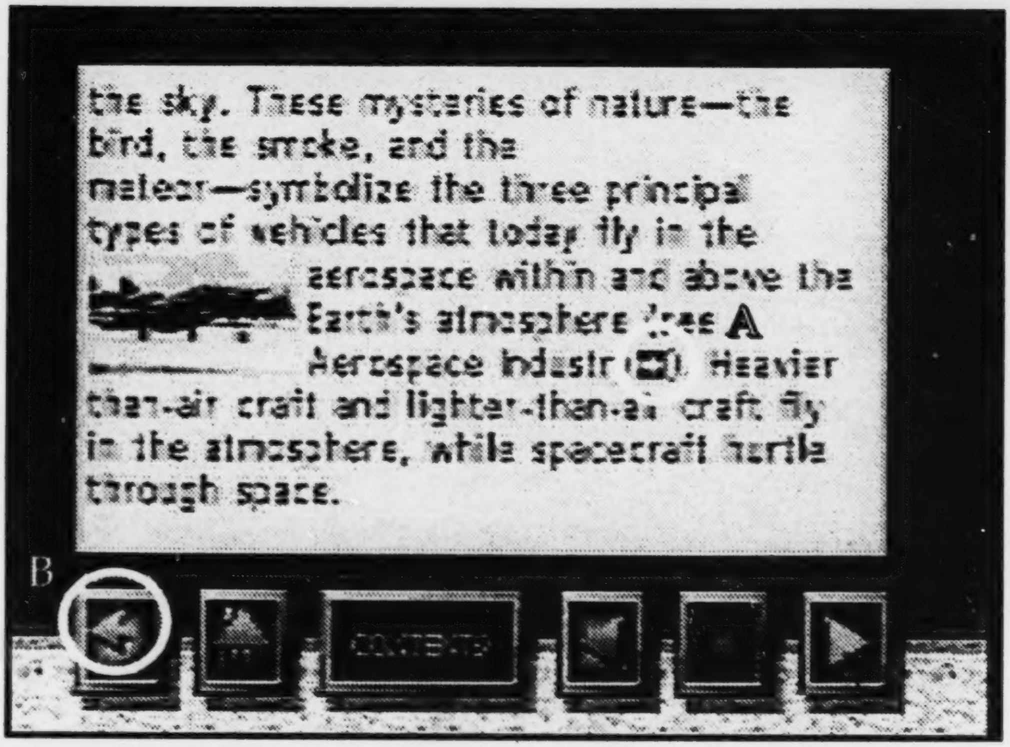

the sky. These mysteries of nature—the bird, the smoke, and the meteor—symbolize the three principal types of vehicles that today fly in the aerospace within and above the Earth's atmosphere (see Aerospace Industry). Heavier-than-air craft and lighter-than-air craft fly in the atmosphere, while spacecraft hurtle through space.

Figure 7
Clicking the Hot Link Arrow (A) takes the user directly to the "see" reference article. Clicking the Back Arrow (B) returns this screen.

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Figure 8: Two Dimensions of Technology Use:

(In response to the question: "During a typical week, which of the following do you use?")

Home Entertainment Technology Users:

☐ Remote-control TV
☐ VCR
☐ Car stereo
☐ Cordless telephone
☐ Call-waiting
☐ Personal computer

In the last month, did you set a VCR to record while you were away? ☐ yes ☐ no

Information Seekers:

☐ Computer info service (such as Prodigy)
☐ Electronic database (such as ERIC)
☐ Library catalog computer (such as LUIS)
☐ Automated Teller Machine (ATM)
☐ Answering machine

Do you know a computer programming language, such as BASIC or FORTRAN? ☐ yes ☐ no

Figure 9: Three Dimensions of Computer Literacy

Computer At-Ease:

1. Computers do not scare me at all.
* 2. Working with a computer would make me very nervous.
3. I do not feel threatened when others talk about computers.
* 4. I fee aggressive and hostile toward computers.
5. It wouldn't bother me at all to take computer courses.
* 6. Computers make me feel uncomfortable.
7. I would feel at ease in a computer class.
* 8. I get a sinking feeling when I think of trying to use a computer.
9. I would feel comfortable working with a computer.
* 10. Computers make me feel uneasy and confused.

Computer Confidence:

* 1. I'm no good with computers.
2 Generally, I would feel OK about trying a new problem on the computer.
* 3. I don't think I would do advanced computer work.
4. I am sure I could do work with computers.
* 5. I'm not the type to do well with computers.
6. I am sure I could learn a computer language.
* 7. I think using a computer would be very hard for me.
8. I could get good grades in computer courses.
* 9. I do not think I could handle a computer course.
10. I have a lot of self-confidence when it comes to working with computers.

Computer Liking:

1. I would like working with computers.
* 2. The challenge of solving problems with computers does not appeal to me.
3. I think working with computers would be enjoyable and stimulating.
* 4. Figuring out computer problems does not appeal to me.
5. When there is a problem with a computer run that I can't immediately solve, I would stick with it until I have the answer.
* 6. I don't understand how some people can spend so much time working with computers and seem to enjoy it.
7. Once I start to work with the computer, I would find it hard to stop.
* 8. I will do as little work with computers as possible.
* 9. If a problem is left unsolved in a computer case, I would continue to think about it afterward.
* 10. I do not enjoy talking with others about computers.

(from Loyd and Gressard, 1986b; an asterisk [*] denotes reverse-coded items)

Figure 10: Two Dimensions of CD-I Satisfaction:

Information Satisfaction (alpha = .85)

* I didn't understand the choices available to me most of the time.	1	2	3	4	5
I was excited when I found the information I was looking for.	1	2	3	4	5
* It's easier to search a printed encyclopedia than the CD-I encyclopedia.	1	2	3	4	5
* Using the CD-I encyclopedia was not my idea of fun.	1	2	3	4	5
I found more information with the CD-I encyclopedia than I would have using a conventional encyclopedia, given the same amount of time.	1	2	3	4	5
I wish that all reference materials were designed like this CD-I encyclopedia.	1	2	3	4	5

Modal Satisfaction (alpha = .75)

The sound, pictures and video made the CD-I search more interesting than research with a conventional encyclopedia.	1	2	3	4	5
I would favor the CD-I encyclopedia over traditional printed encyclopedias if I had both in my home.	1	2	3	4	5
I would like to spend more time with this program.	1	2	3	4	5
* It was difficult to read the text on the screen.	1	2	3	4	5
* The video contributed little to my knowledge of the subject.	1	2	3	4	5
The CD-I encyclopedia has an attractive layout and design.	1	2	3	4	5

(Items with an asterisk (*) are reverse coded)

Table 1:
Mean CD-I Information Satisfaction By Two Measures of Technology Use *

Type of Technology Use	Amount of Technology Use: LOW	HIGH	F	p
Everyday Technology Users	3.6	3.9	2.1	NS
Information Seekers	3.5	4.0	5.3	<.05

* CD-I Information Satisfaction is scaled from 1 (low) to 5 (high).

Table 2:
Mean CD-I Modal Satisfaction By Two Measures of Technology Use *

Type of Technology Use	Amount of Technology Use: LOW	HIGH	F	p
Everyday Technology Users	4.3	4.4	.62	NS
Information Seekers	4.3	4.3	.28	NS

*CD-I Modal Satisfaction is scaled from 1 (low) to 5 (high).

Table 3:
Mean CD-I Information Satisfaction By Three Measures of Computer Literacy *

Computer Literacy Measures	Amount of Computer Literacy LOW	MED	HIGH	F	p
Computer At-Ease	3.4	3.6	4.0	3.26	<.05
Computer Liking	3.5	3.8	3.9	1.19	NS
Computer Confidence	3.4	3.8	3.9	3.18	<.05

* CD-I information satisfaction is scaled from 1 (low) to 5 (high).

Table 4:
Mean CD-I Modal Satisfaction By Three Measures of Computer Literacy *

Computer Literacy Measures	Amount of Computer Literacy LOW	MED	HIGH	F	p
Computer At-Ease	4.2	4.3	4.3	.85	NS
Computer Liking	4.2	4.4	4.3	.54	NS
Computer Confidence	4.2	4.3	4.4	.51	NS

*CD-I modal satisfaction is scaled from 1 (low) to 5 (high).

Figure 11: Affective Responses to the CD-I Experience

Best CD-I Attributes:

Mean Scores						
4.6	*It was difficult to read the text on the screen.	1	2	3	4	5
4.5	The CD-I encyclopedia has an attractive layout and design.	1	2	3	4	5
4.5	The sound, pictures and video made the CD-I search more interesting than research with a conventional encyclopedia.	1	2	3	4	5
4.5	I would like to spend more time with this program.	1	2	3	4	5
4.4	The structure of the CD-I encyclopedia encouraged me to browse.	1	2	3	4	5
4.2	I would favor the CD-I encyclopedia over traditional printed encyclopedias if I had both in my home.	1	2	3	4	5

Worst CD-I Attributes:

2.0	* I wish I could print on paper the articles I read.	1	2	3	4	5
3.2	* If I was doing a paper on the subject, the information in the CD-I encyclopedia would not have been sufficient.	1	2	3	4	5
3.3	I feel the information I got from the CD-I encyclopedia was complete.	1	2	3	4	5
3.4	* The video contributed little to my knowledge of the subject.	1	2	3	4	5
3.4	I found more information with the CD-I encyclopedia than I would have using a conventional encyclopedia, given the same amount of time.	1	2	3	4	5
3.5	* I didn't understand the choices available to me most of the time.	1	2	3	4	5
3.5	* It's easier to search a printed encyclopedia than the CD-I encyclopedia.	1	2	3	4	5

(Items with an asterisk [*] are reverse coded.)

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Telecommunications Regulation: From Natural Monopoly to Open Network Architecture

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Prepared for:

Qualitative Studies Division
1993 Annual Convention
Association for Education in Journalism and Mass Communication
Kansas City, MO
August 11-14, 1993

In a sense, we are writing the rules of the revolution on the fly, and it is a difficult chore. It is difficult for us, and I know it is difficult for you. But I think to undermine that revolution would be catastrophic for the country

Alfred C. Sikes, chairman of the Federal Communications Commission, in testimony before the House subcommittee on telecommunications and finance, October 23, 1991.

We have a responsibility to make certain that the revolution serves the people rather than enslaving consumers and competitors alike.

Rep. Edward Markey, chairman of the House subcommittee on telecommunications and finance, October 24, 1991.

Convergence of telephone, computer, and television technologies is challenging federal regulators to develop policies that continue to promote dual, and often conflicting, US goals of an efficient, universally accessible telecommunications system and effective competition in the telecommunications industry (Third Computer Inquiry 1985, 33601). The US Department of Justice, through antitrust actions, and the Federal Communications Commission, through rule-making, have attempted to maintain an equilibrium as changing technologies have brought a fundamental restructuring of the telecommunications network and international competitiveness has become increasingly important as a national priority. The FCC's planned "open network architecture" policy, which the Department of Justice helped to initiate and which would provide full access to the regulated telecommunications network to all competitors of the regional Bell operating companies, offers the latest attempt to maintain that equilibrium.

This paper examines what factors led to development and FCC adoption of the open network architecture policy. Under review are past telecommunications regulatory trends including Department of Justice antitrust actions, legal challenges that helped to open access to the AT&T "natural monopoly" of the telecommunications system, and the FCC's "computer inquiries" that have attempted to address the merging of telephone and computer technologies. Also under examination are convergence of telephone and television technologies, development of related "open architecture" initiatives in the computer industry, and problems with implementation of computer open architecture that also may affect implementation of the open network architecture policy. A study of the historical context of the FCC's development and promotion of open network architecture brings an analysis of the relationship between the policy and efforts to develop a national broad-band, fiber-optic network before international competitors such as Japan and Germany.

Full access

Through the Third Computer Inquiry in 1986, the FCC established open network architecture as one of two non-structural safeguards to allow the regional Bell operating companies to provide computer-based enhanced or non-telephone services without structural safeguards – creation of separate subsidiaries and accounting systems as the commission had required previously in the Second Computer Inquiry in 1980 (Third Computer Inquiry 1986a, 963). From the First Computer Inquiry in 1971, the FCC had attempted to distinguish between telephone services and computer-based services, such as voice mail, alarm monitoring, and videotex, that the telephone network could accommodate. As technologies advanced, FCC officials acknowledged that efforts to distinguish between these types of services were becoming more and more difficult (Third Computer Inquiry 1985, 33581). Provision of improved accounting methods to regulate allocation of costs between the regional Bell companies' regulated and non-regulated services was to provide the second non-structural safeguard (Third Computer Inquiry 1986a, 1069).

The Modified Final Judgment, which in 1984 had resulted in divestiture of the regional Bell operating companies and Western Electric from AT&T, included provisions for "equal access" for long-distance carriers, and the decision eliminated the business relationship between local-exchange carriers – the regional Bell operating companies – and AT&T (US v. AT&T 1982, 171-172). As FCC officials envision open network architecture, the policy would allow all suppliers of enhanced telecommunications services to have full access to the regulated local-exchange network (Third Computer Inquiry 1986a, 1019). Such access would prevent the regional Bell operating companies, which maintain regulated dominance of the local exchanges, from discriminating against competitors for provision of enhanced services (Third Computer Inquiry 1986a, 1020). The open network architecture policy also would require the Bell companies to "unbundle" basic service elements so that competitors could literally pick and choose which services they would use to develop enhanced services. Any service available to one Bell customer would be available to all Bell customers, including competitors for provision of enhanced services (Third Computer Inquiry 1986a, 1020). The open network architecture policy also requires the Bell companies to make available to other enhanced service providers information about basic service element interfaces through standards in the public domain or specifications made available to them (Smith 1991, 383). With full implementation of open network architecture, cost and service quality rather than technology advantages would determine market shares for suppliers of enhanced telecommunications services.

FCC approval of non-structural safeguards for provision of enhanced services came only 14 months after the commission had required retention of structural safeguards – separate subsidiaries – in the "BOC Separation Order" in which the commission determined how the Second Computer Inquiry rules would affect the divested Bell companies (California et al 1990, 1228). The Ninth Circuit US Court of Appeals mused over the timing of the reversal of opinion in its 1990 ruling that the FCC had been "arbitrary and capricious" in its decision to remove structural safeguards for provision of enhanced services and in violation of the Administrative Procedure Act (1246). The court remanded the case to the FCC for review and further proceedings.

The appeals court did not specifically challenge the open network architecture provisions of the Third Computer Inquiry and endorsed the notion that implementation of open architecture could improve the enhanced services market (1238). While the Third Computer Inquiry could help limit access discrimination, dangers that the Bell companies would use revenue from their local-exchange monopolies to help fund provision of enhanced services remained, the court held. The court, in fact, indicated that increased competition in the enhanced services market could have been a better rationale for removal of structural safeguards:

> Unlike "minimum rationality" review under the due process and equal protection clauses, "arbitrary and capacious" review under the APA does not permit us to impute reasons to the agency and uphold its action if it has any conceivable basis. Although the commission could have decided that the national interest in allowing the BOCs to compete more efficiently in the enhanced service industry justified reduced regulatory protection against cross-subsidization, that is not the case before us (1240-41).

Former FCC Chairman Alfred C. Sikes, in a response to the court decision, indicated that the intent of the Third Computer Inquiry was to promote development of the nation's electronic infrastructure, to move toward full and fair competition in the telecommunications industry, and to advance national competitiveness in the global economy (1990a, 16). Sikes characterized open network architecture as the "linch-pin" of US telecommunications policy:

> We cannot afford to move away from a unified, more national, framework at precisely the same time that other administrations are moving in the opposite direction. Our ONA effort emphasizes harmony of network services and access. We cannot afford now to move toward a more fragmented approach (1990a, 17).

Regulatory concerns

Prior to the 1950s, AT&T maintained a "natural monopoly" of the US telecommunications system with competition from only a few independent telephone companies that provided local-exchange services. Federal regulatory concerns began with involvement of AT&T in businesses other than provision of telephone services and eventually included interoperability, interaccessibility, market foreclosure, cross-subsidization, and control of the local exchange "bottleneck." AT&T had enjoyed complete control of equipment that could be connected to the telecommunications network prior to court decisions that began in 1956 (US v. AT&T 1982, 170). Interconnection of independent telephone companies to the Bell system had been a concern of regulators since the beginning of the regulated network. The Kingsbury Commitment, another antitrust settlement, in 1913 provided for interconnection with "qualified" independents (Vietor 1989, 33). Introduction of new microwave technology in the 1950s set the stage for the court battles that brought the end of AT&T's monopoly in long-distance service (US v. AT&T 1982, 170).

Existence of AT&T's vertical monopoly prior to divestiture brings continuing concerns that the Bell companies if allowed to enter manufacturing or some enhanced services would preclude dealings with other suppliers and reduce the market for their goods and services. Such market foreclosure has been an issue of particular concern in debate over Bell company entry into manufacturing services since the Bell companies' competitors indicate that their entry into manufacturing would limit their purchases from other industries (House 1991a, 173). Counter-arguments to the market foreclosure concerns have been that the Bell companies could provide needed capital for smaller companies to develop goods and services through joint ventures (House 1991a, 151. Without such Bell company participation, such companies may seek assistance from foreign companies and the United States may lose opportunities for development of innovations (House 1991a, 152).

Cross-subsidization, which was the key concern of the Ninth Circuit Court of Appeals in the challenge to the Third Computer Inquiry, involves use of revenue from regulated services to finance non-regulated services. Specifically, Bell company critics indicate that revenue from the "bottleneck" local exchanges will go to fund entry into provision of enhanced services (House 1991, 424). While such cross-subsidization could penalize residential and small-business customers with inflated costs and provide a competitive edge for the Bell companies against enhanced service competitors, trends of cross-subsidization in the past generally have involved flow of revenue toward the residential and small-business market, not away from them, to provide funding for universal access (Noam 1987, 43).

The key issue in the debate over regional Bell company operations has involved the "bottleneck" or local-exchange monopoly (US v. AT&T 1982, 162). While the Bell companies continue to provide local-exchange services to approximately 90 percent of telephone customers, the FCC is moving to end the legal monopoly that the Bell companies have in the local exchanges (Ramirez 1992, A1). Bell company officials indicate that while they continue to have dominance in the local exchanges, they essentially are in the same position as the single daily newspaper in a community – no legal barriers exist to prevent competition in the community (House 1991a, 639). The view that telephone service is a "natural monopoly" has failed to survive legal challenges and technology changes, and Alfred Sikes, when he was director of the National Telecommunications and Information Administration of the Department of Commerce, contended that regulators have to move from "cartel management" to open-entry, procompetitive policies (1987, 6).

Antitrust actions

Sanctioning of a regulated monopoly creates problems for other government agencies whose purpose, for example, is to curtail antitrust violations. The Justice Department generally has been successful in its actions against AT&T's efforts to participate in businesses other than telephone service. Divestiture of Western Union, the 1956 Consent Decree that barred entry into data processing services, and the Modified Final Judgment that brought divestiture of Western Electric and the regional Bell operating companies, provided successes against AT&T for the antitrust division of the Department of Justice. AT&T's role in development of the broadcasting industry brought congressional inquiries and Federal Trade Commission investigations (1924, 30), and AT&T divested its radio holdings in 1926. The most recent antitrust action did not deal specifically with control of non-telephone services, but interconnection of AT&T competitors (US v. AT&T 1982, 165). Competitors of AT&T charged that the company was engaging in unfair price competition in its long-distance service and the Bell regional subsidiaries were impeding or delaying interconnection with the competing services (US v. AT&T 1982, 162).

The resulting Modified Final Judgment that went into effect January 1, 1984, was the result of the third antitrust action against AT&T since the patents of Alexander Graham Bell began to expire in 1894. Of particular concern has been the Bell system's entry into new or competing technologies. The first antitrust investigation of AT&T in 1912 resulted in divestiture of Western Union, which it had acquired in 1909. Also at issue in that investigation was "interaccessibility," interconnection of independent telephone systems to AT&T. AT&T agreed in the Kingsbury Commitment, named after Nathan Kingsbury, an AT&T vice president, to provide such interconnections if the independent companies met specific standards and to limit its acquisition of independent telephone companies (Vietor 1989, 33).

The next round of antitrust action came in the 1920s and resulted in AT&T ending its role in radio broadcasting (House 1991, 135). AT&T owned New York's WEAF that had pioneered sale of commercial time, had the ability through its long-distance services to establish networks of radio stations, and established control of all broadcasting transmitters through its patents and patent licenses from the Radio Group, which included RCA, General Electric, and Westinghouse (Berkman 1988, 36). Such control resulted in congressional inquiries, Federal Trade Commission hearings (Banning 1946, 281), and at least one antitrust complaint than an Ohio radio station owner filed with the Department of Justice ("Asks Federal Inquiry" 1925, 25). Officials of AT&T and the Radio Group were involved in negotiations about the license agreements in 1926 when a referee held that the 1920 pact that established the license arrangements "might be contrary to law" (Banning 1946, 280). Although AT&T officials in private had expressed interest in monopoly control of radio (FTC 1924, 84), the official reason for the company's eventual sale of its radio network to RCA in 1926 was successful completion of a programming experiment. "The further the experiment was carried the more evident it became that while the technical principles were similar to that of a telephone system, the objective was quite different from those of a telephone system ("WEAF" 1926, 1). WEAF and its affiliate stations became the National Broadcasting Co. "Red Network." Agreements with the Radio Group to bring sale of the network and to settle license disputes confirmed AT&T's monopoly in provision of domestic and transoceanic radiotelephone service (Danielian 1939, 128). The Department of Justice challenged the agreements in an antitrust action in 1930, but AT&T and the Radio Group in 1932 agreed to revised contracts to change exclusive provisions to non-exclusive provisions (Danielian 1939, 133). The US District Court in Wilmington, Delaware, dismissed the case against AT&T and Western Electric in 1932, but a consent decree required member companies of the Radio Group to end their cooperative agreements (Danielian 1939, 134).

By the late 1940s, AT&T's ownership of Western Electric, its manufacturing arm, resulted in another antitrust action. The resulting Consent Decree in 1956 brought restrictions on AT&T's entry into non-telecommunications businesses and limited its manufacturing operations to telecommunications equipment (US v. AT&T 1982, 138). Of particular concern was AT&T's control of the local "bottleneck." The 1956 Consent Decree did not prevent AT&T from becoming one of the largest users of computer services in the United States or its Bell Laboratories from engaging in computer-related research (Huber 1987, 35).

The Justice Department renewed its antitrust investigation of AT&T in 1974, and the Modified Final Judgment in 1982 brought the divestiture of the regional Bell operating companies and Western Electric. The Modified Final Judgment transferred regulatory concerns about local exchange "bottleneck" control from AT&T to the regional Bell operating companies (US v. AT&T 1982, 171). The 1956 Consent Decree prohibitions against manufacturing and provision of information services, including data processing and content-based electronic publishing, also moved from AT&T to the Bell companies (Third Computer Inquiry 1986a, 976).

Along with its specific provisions, the Modified Final Judgment moved telecommunications policy debates from the halls of Congress and FCC meeting rooms to the courtroom of Judge Harold Greene. Greene has maintained control over the implementation of the provisions of the Modified Final Judgment despite protests from the FCC, Congress, the National Telecommunications and Information Administration, and even the Department of Justice, which initially brought the antitrust case against AT&T to Greene's courtroom (House 1991a, 75). Greene has been reluctant to ease business prohibitions against the regional Bell operating companies. The judge amended the Modified Final Judgment in 1987 to allow the Bell companies to provide data-processing services, which do not involve control of content (California et al 1990, 1224). Greene last year approved Bell company entry into electronic publishing at the prodding of an appeals court (Skrzycki 1991, 1A). The U.S. Court of Appeals for the District of Columbia in May upheld Greene's decision. Before Congress adjourned in October 1992 without setting conditions for Bell company entry into electronic publishing, Rep. Jack Brooks, a Texas Democrat and chairman of the House Judiciary Committee, had succeeded in gaining consideration of an antitrust-based bill that would require the Bell companies to show that their entry into a service field would not hamper competition in that field. Entry approval would require Department of Justice and probably court review (Mintz 1991, 21-22).

"Foreign attachments"

Concurrent with antitrust actions against AT&T were legal challenges of tariffs that protected the company from use of any other companies' equipment on the regulated network. Challenges began in 1948 when AT&T sought an end to use of the "Hush-a-Phone," a simple plastic shield that helped muffle surrounding noise for telephone use. The shield did not connect to the AT&T network. After seven years of review, the FCC agreed that the Hush-a-Phone violated the "foreign attachments" restriction for the AT&T network. A federal appeals court set aside the FCC action in 1956 and held that the restriction on use of the Hush-a-Phone was "unwarranted interference with the telephone subscriber's right to use his telephone in ways which are privately beneficial without being publicly detrimental" (Hush-a-Phone 1956, 269). AT&T amended its tariffs, but continued to prohibit electrical connection of customer-provided equipment to the regulated network (US v. AT&T 1982, 170).

The next test of interoperability came in 1965 when Tom Carter, the manufacturer of the Carterfone, filed a lawsuit to challenge AT&T's refusal to provide service for his customers. The Carterfone provided a non-electronic link between mobile-radio channels and the telephone network. The court remanded the antitrust case to the FCC, which ruled in Carterfone's favor (Carterfone 1968, 442). That ruling opened up a flood of products for use with the AT&T network (Vietor 1989, 58). AT&T attorneys had argued that connection of "foreign attachments" posed hazards to the telephone network:

> The telephone companies point out the design of the entire network has been governed by the systems concept. That is to say, the network as a whole is regard as a single system with the effect that every part on each of the other billions of parts being calculated before its introduction into the system. If this is not done, so goes the theory, the introduction of a single disruptive piece could have an ever-widening effect on every other piece in the system and ultimately destroy the efficacy of the whole. For this reason the telephone companies contend that they must control every element of the system if they are to accept responsibilities for its operation (Carterfone 1968, 434).

Debate about interoperability continued for more than a decade after the Carterfone decision as the FCC urged AT&T to adopt reasonable standards and the telephone system required use of protective devices for non-Bell equipment (Vietor 1989, 58). The FCC in 1972 initiated a certification process that required protective standards rather than protective devices. The FCC certification process survived a legal challenge from AT&T in 1977 and went into effect fully in 1978 (US v AT&T 1982, 163).

In the same year of the antitrust Consent Degree, the FCC began a proceeding that eventually would bring total long-distance interconnection for the AT&T network. At issue was the new technology of point-to-point microwave transmissions. The FCC in 1959 ruled in favor of liberalizing licensing of private microwave systems. In 1969 the FCC approved, after six years of review and debate, an application from Microwave Communications Inc. to provide long-distance services. The commission in 1971 expanded the MCI ruling to allow provision of data transmission through specialized services and to require interconnection of local-exchange services including the Bell system companies with any new carrier "on reasonable terms and conditions" (Specialized Common Carriers Services 1971, 940). Competition in long-distance services remained unsettled until 1978 when the DC Circuit US Court of Appeals upheld its 1976 Execunet ruling that required AT&T to provide interconnections for MCI on the basis of the Specialized Common Carriers Services decision (US v. AT&T 1982, 170). The court removed the "private line" restriction that the AT&T and FCC had argued that the Special Common Carriers Services decision had required (MCI v. FCC 1978, 600). The Modified Final Judgment mandated "equal access" for long-distance carriers. Interconnections for equal access essentially were complete by 1987 (Hausman 1989, 206). The Modified Final Judgment can be viewed as the culmination of court decisions that removed AT&T's protection from foreign attachments.

Computer inquiries

Similarly, the open network architecture policy essentially involves, as the Ninth Circuit Court of Appeals noted, interconnection issues. While structural safeguards had provided an effective means to regulate AT&T's control of telegraphy, radio stations, and manufacturing, such physical divisions have proven more difficult with convergence of telephone, computer, and television technologies. Then-FCC Chairman Mark S. Fowler acknowledged in 1981 that technological changes were proceeding so rapidly that "many of the former definitions of services are becoming blurred" (Fowler 1981a, 7). The FCC in 1966 began its efforts to regulate the relationship of telephone and computer technologies. The FCC's First Computer Inquiry, issued in 1971, provided that the agency would continue to regulate telecommunications and would not regulate data-processing services (Third Computer Inquiry 1985, 33582). The FCC decided to handle "hybrid" cases of telecommunications and data processing essentially on an individual basis. The First Computer Inquiry included a structural separation requirement for carriers that wanted to provide data processing services and had more than $1 million in annual revenues, but the rule did not apply to AT&T or its subsidiaries because of the 1956 Consent Decree ban against provision of information services (Third Computer Inquiry 1986a, 967).

By 1980 the FCC decided to look to structural safeguards to allow AT&T's entry into data-processing services. Converging telephone and computer technologies had made impossible the drawing of an "enduring line of demarcation" (Third Computer Inquiry 1986a, 968). The Second Computer Inquiry provided for establishment of separate divisions for provision of enhanced services. The FCC distinguished between "basic" services, which essentially are telephone services, and "enhanced services," which are computer-based services (Third Computer Inquiry 1986a, 968). Computer technology plays some role in provision both of basic and enhanced services, but enhanced services involve some function beyond transmission of telephone messages (Huber 1987, 28). Although Peter Huber, who wrote the first triennial report on the AT&T divestiture for the Department of Justice in 1987, contended that the Department of Justice's "information" services and the FCC's "enhanced" services essentially are the same thing (27), the Ninth Circuit Court of Appeals indicated that distinctions do exist although the terms "substantially overlap" (California et al 1990, 1226). After divestiture in 1984 AT&T won approval to enter electronic-publishing services after a seven-year moratorium (Third Computer Inquiry 1986a, 976).

The Third Computer Inquiry in 1986 brought the regulatory shift from structural to non-structural safeguards. FCC officials indicated that the non-structural proposals needed to come because of changes in the telecommunications and computer-services marketplace (Third Computer Inquiry 1985, 33582). Goals of the initiative were efficiency and increased competition:

> We tentatively found that the costs of those (Second Computer Inquiry) requirements in lost innovation, inefficiency, and delay outweigh their benefits in preventing cross-subsidization and discrimination; and we proposed replacing such requirements with non-structural safeguards. In addition, we recognized that the advent of more flexible, competition-oriented regulation would permit dominant carriers to provide enhanced services integrated with their basic network facilities (Third Computer Inquiry 1986a, 963).

FCC officials acknowledged that development of the open network architecture policy proposal came as a result of comments from its notice of proposed rule-making in 1985 rather than commission planning and initiatives (Senate 1987, 47). Although the 1985 FCC notice had included provisions for "comparably efficient interconnection" opportunities, the commission also had included a proposal for "a new regulatory framework based on economic analysis of markets for specific services" (Third Computer Inquiry 1986a, 964). The FCC in the Third Computer Inquiry rejected that proposal in favor of open network architecture and improved cost-allocation rules. The FCC included "comparably efficient interconnection" as an interim step in development of a comprehensive open network architecture policy (Third Computer Inquiry 1986a, 1059).

The Department of Justice's effort to provide equal access for long-distance carriers through the Modified Final Judgment may have resulted in the department's support for open network architecture to provide equal access for information or enhanced services (Jackson 1989, 8). The Department of Justice offered the following comments for the Third Computer Inquiry:

> The public interest would be served by commission efforts to consider provision of ancillary services by carriers controlling bottleneck monopolies and such carriers offering other providers of ancillary services with the same interconnection to the bottleneck that the dominant provider carries itself. To the extent network open architecture can put all ancillary service providers, including the dominant carriers, on an equal footing, to protect against anticompetitive abuses. By limiting the bottleneck monopoly in this manner, the commission can rely on technology rather than direct regulation to promote competition in the most efficient manner (Third Computer Inquiry 1986b, 27).

Along with the Department of Justice's endorsement of "network open architecture" or open network architecture, other comments from Ameritech and US West, regional Bell operating companies, also supported expansion of the "comparably efficient interconnection" provision (Third Computer Inquiry 1986a, 1060-62). Ameritech offered the concept of Feature Node/Service Point that would have offered basic service capabilities that enhanced services providers would use to design a wide variety of such services. Although the proposal paralleled the eventual open network architecture policy, some problems existed with interconnection capabilities of the Ameritech plan (Third Computer Inquiry 1986a, 1061). The proposal of Bellcore, the research arm of the regional Bell operating companies, to provide an "Intelligent Network 2" or "Advanced Intelligent Network" also has received credit for the FCC's adoption of its open network architecture policy. The AIN would allow access to enhanced services on a call-by-call basis rather than through some prior definition of the customer loop (Salles 1989, 34+). FCC officials also have indicated that approval of the open network architecture policy resulted from success of similar requirements for protocol conversions and certain kinds of packet-switched data services (Senate 1987, 47).

Video

With its computer inquiries, the FCC attempted to stay abreast of changing computer technologies and the changing regulatory environment of the Modified Final Judgment. The FCC also has tried to work on convergence of television and telephone technologies through a "video dial tone" policy, first proposed when former FCC Chairman Sikes was director of the National Telecommunications and Information Administration (Senate 1990, 3). Control of content has been the chief concern of opponents of the FCC's and NTIA's positions in favor of the Bell companies providing video services (Senate 1990, 93). Opponents have argued that telephone company entry into video and other information services will reduce the number of voices, but supporters indicate that failure to allow their entry is a suppression of the freedom of expression (Skrzycki 1991, 1A). An FCC proposal to allow Bell companies to acquire ownership of 5% of programming for video dial tone services is facing court challenges from both the television industry, which contends that the policy goes too far, and from the telephone industry, which argues that the policy does not go far enough (Flint 1992, 40). Provision of "integrated services digital network" technology through a single "twisted pair" of copper wires already is adding video technology to telephone and computer technology. Low-band ISDN technology, now going into place, provides a video quality that is adequate for teleconferencing and security surveillance. Broad-band ISDN technology, now under development for fiber-optic systems, will provide video of a broadcasting or cable quality. Use of digital compression, a reduction in the amount of data needed to reconstruct an image, also may allow transmission of video services through current telephone lines ("System Sends" 1992, 1), and increase the capability of cable television systems to provide information services (Andrews 1992c, C1).

"Open architecture"

Former FCC Chairman Sikes had noted that the FCC open network architecture approach in the Third Computer Inquiry was comparable to the "open architecture" approach for the computer industry that began when IBM offered "personal computers" with "an operating system conducive to user experimentation and independent software development " (1990a, 31). That rationale may include some degree of irony. Despite past reluctance to regulate computer services, the FCC had proposed a computer-based solution to a telecommunications regulation problem.

IBM's introduction of the PC in 1981 marked the beginning of "open" computer architecture (Verity 1991, 73). Prior to the PC, users relied on hardware manufacturers for software and peripherals with little opportunity for interoperability or interaccessibility. Release of PC standards allowed independent software and peripheral companies to develop products that were compatible with the IBM system and resulted in the manufacture of numerous "clones" that subsequently have decreased IBM's market share (Huber 1987, 10). Increases in microcomputer capacity and networking capabilities of microcomputers also have resulted in establishment of companies whose function is integration, after purchase, of previously incompatible computer systems. Such integration also has reduced sales of hardware and minicomputer systems (Verity 1991, 75).

Subsequent development of the MS-DOS and UNIX operating languages also contributed to open architecture efforts (Verity 1991, 74). Efforts to open computer architecture further have resulted in establishment of consortia whose purpose is to develop operating standards to increase compatibility. Such consortia include the Open Software Foundation, the Advanced Computing Environment, and X-Open. Unusual alliances have resulted including a pact between IBM and Apple to integrate hardware and software. Proposers of standards include the American National Standards Institute, the International Organization for Standardization (ISO), the International Consultative Committee for Telephony and Telegraphy, and the Institute for Electrical and Electronics Engineers.

ISO established an Open Systems Interconnection model for computers in 1977. Divisions of the model include application, presentation, session, transport, network, data link, and physical layers arrayed on a hierarchical basis from application, which supplies utilities for computing applications or nodes on the network, down to physical, which includes type of medium and operating specifications. IEEE has further divided the data link layer into the medium-access-control layer and logical-link control layer. Each layer in the model uses services of the layers below and can communicate only with the layers above and below. Between products, layers communicate only with their counterparts (Gallant 1992, 57). Key issues of development of computer standards involve whether they are open, not tied to a vendor, or proprietary, vendor controlled; whether they are de jure, resulting from formal standards organizations, or de facto, resulting from marketplace acceptance; and whether they are documents, specifications of a standard, or products, implemented technology (Gallant 1992, 55). Open systems also can mean "a mixture of whatever can be purchased from a range of vendors and works together" (Forge 1991, 964).

The goal of open architecture is "seamless" use of computers with interconnection to all other brands and models and full use of all software regardless of the hardware in use. Participation in open architecture remains voluntary, and critics indicate that lack of mandatory standards will impede realization of a full-fledged open architecture (Almarin 1991, 60). Other incentives exist including the US government's policy only to do business with computer companies that provide open architecture (Verity 1991,77). Uncertainty about the future of open architecture has created problems in the marketplace as corporations have delayed equipment purchases because of concern that "open" features not available now would be available in the near future (Verity 1991, 74).

Critics of the FCC's open network architecture plans indicate that similar confusion will occur in implementation of that policy (Smith 1991, 392). Bell companies' open network architecture plans began coming into the FCC in 1988, but significant review and refinement remain before "seamless" interconnection is in place. A group called the Coalition of Open Network Architecture Providers already has filed a complaint with the FCC because of concerns that terminal equipment products from AT&T and Siemens are not compatible (Connelly 1991, 13). Critics contend that the Common ONA Model, which Bellcore, the research arm of the regional Bell operating companies, has developed, essentially fails to provide the open standards necessary for the proposed policy (Smith 1991, 384). The Common ONA Model provides for basic service arrangements as well as basic service elements. Competitors will have to subscribe to the basic service arrangement before access to basic service elements will be available (Hatfield 1989, 6).

Other issues of concern are collocation, physical presence of competitors' equipment at necessary points along the regulated network (Third Computer Inquiry 1985, 33599), and whether telecommunications companies will accept voluntarily open network architecture standards (Almarin 1991, 60). Acceptance of low-band ISDN standards may provide an indication of the seriousness of the latter concern. Southwestern Bell and US West, regional Bell operating companies already have declined to accept a voluntary national standard for low-band ISDN (Andrews 1992b, C6).

ONA doubts

Open network architecture became a federal policy with little public awareness or debate (Obuchowski 1990, 25+). Sen. Daniel Inouye, a Democrat of Hawaii and chairman of the subcommittee on communications, complained in 1987 that open network architecture was an untested method of dealing with possible Bell company violations:

> The commission's Third Computer Inquiry is premised on two policies: the establishment of open network architecture to permit non-discriminatory interconnection and the creation of an accounting scheme to allocate joint costs. Neither of these policies has been tested. In fact, it is not clear how well either has been defined. Why has the commission placed so much faith in uncertain policies? What are your plans for ensuring the success of these policies? Does the commission believe it has sufficient resources to implement these policies, particularly the accounting rules? (Senate, 47).

Questions about the FCC's ability to monitor the Bell companies' accounting practices continued in 1991 as the companies sought congressional approval for entry into information services and entry into manufacturing (House 1991a, 387). Former FCC Chairman Sikes assured House members that the commission's Automated Reports and Management Information System, an expanded auditing effort, and independent audit requirements provided adequate safeguards. Sikes acknowledged that the FCC had only 15 staff auditors and three supervisors, but he said the independent audits and state audits help provide comprehensive financial review (House 1991a, 391). Sikes also contended that substitution of price caps for rate-of-return regulations minimized the possibility of cross-subsidization (House 1991a, 375). The price-cap policy provides limits on charges for services based on a formula that includes costs of providing the services and a productivity factor (NTIA 1991, 209). Sikes told House members in 1991 that with price caps undetected cross-subsidization only resulted in lower profits for the telephone company (House 1991a, 375). Rep. Edward Markey, a Massachusetts Democrat and chairman of the subcommittee on telecommunications, was unconvinced:

> Price cap is constantly used as a placebo to solve so many problems for this committee from unfair competition, deteriorating service quality, phone outages. But we know quite well that ... they were able to take this profit which they made and cross-subsidize. That is the issue, cross-subsidization. We don't have anything more that the ephemeral promise of non-structural safeguards to protect competitors, and as a result, consumers face the long-term prospect of raising prices, because you won't have a competitive marketplace (House 1991a, 388).

Information policy

The Third Computer Inquiry came during the deregulation era of the Reagan administration, amid growing concern about the role of the national telecommunications network in future international competition, and in the wake of the Modified Final Judgment divestiture of the regional Bell operating companies and Western Electric from AT&T. Competition and changing technologies had begun to change the face of the telecommunications industry. FCC officials in 1985 described as revolutionary the changes in the telecommunications industry since World II. "In the 1940s, telecommunications was virtually a complete monopoly by AT&T and the then-Bell companies," the FCC notice of rule-making for the Third Computer Inquiry stated. "Independent telephone companies participated, but they were partners with the Bell system, not competitors" (33581).

US West, a regional Bell operating company, proposed in its comments on the proposed Third Computer Inquiry that open network architecture eventually replace federal regulation of telecommunications (1986a, 1062), a goal that then-FCC Chairman Mark S. Fowler had endorsed as "unregulation" rather than "deregulation" (Fowler 1981b, 2). Fowler pledged during his first year as FCC chairman to "create, to the maximum extent possible, an unregulated, competitive marketplace environment for the development of telecommunications" (1981a, 4). Fowler contended that regulation embraces the status quo, limits private incentive, stymies innovation, and provides no incentives to cut costs or increase efficiency (1983, 419). Fowler had proposed in a law journal article in 1986 that three states agree to "unregulate" telecommunications as a model for a federal policy change (195). He received no takers for the proposal. Despite Fowler's efforts, a criticism of the Reagan era was that the FCC had not clearly articulated "a clear vision of how the interstate market can be totally deregulated" (Crandall 1988, 31). Washington Post television columnist Tom Shales took a somewhat more pointed view about Fowler's policy role as he was departing from the FCC chairman's post in 1987. "We are as well rid of him as the indignant villagers well rid of Dr. Frankenstein," Shales wrote. "Fowler was one of a kind: a mad scientist who kept trying to burn down his own laboratory" (3B).

The FCC and the Department of Justice had done a rather quick about-face in their views on regional Bell company entry into information services and manufacturing after divestiture. Regulators cited new market conditions (Third Computer Inquiry 1985, 33584), but an underlying theme of their reversal of viewpoint was concern about the competitive position of the United States in provision of telecommunication services and specifically whether Japan and Germany, among others, would develop a broad-band, fiber-optic network, before the United States (Sikes 1991a, 8). FCC Chairman Sikes indicated that international competition has upped the ante: "A decade ago, communications policy-making was easier. The United States did not generally confront the international competition and rivalry that it does today. The risks of choosing wrongly were much less" (Sikes 1990a, 32).

Regulators and telecommunications industry officials offer prospects of a rich variety of services that could include videotex systems, random access for entertainment fare, and simultaneous transmission of voice, data, and video through the broad-band, fiber-optic network (Sikes 1991a, 8). Prospects of telephone company entry into programming for such services have brought regulatory, legal, and congressional battles and opposition from current providers of such services including the broadcasting industry, the cable industry, and newspapers. Consumer groups and state regulatory officials have expressed concern about the ability of the FCC to monitor adequately Bell telephone company entry into provision of such services (House 1991a, 754). Also at issue is whether the United States can build a telecommunications network for the so-called "information age" without full cooperation of the seven regional Bell operating companies (House 1991a, 592). As then-FCC Chairman Sikes noted:

> And if the phone companies can't offer such (information) services to the residential customers on a profitable basis, for instance, will hey ever install broadband facilities to the home? It is, after all, those broadband facilities which will make real entrepreneurship likely (1990b, 6).

Despite concerns about continued monopolistic characteristics in the telephone system, regional Bell operating company officials contend that local exchange bypass, particularly through the resources of large businesses, already is reducing the "bottleneck" characteristics of the local exchanges (House 1991a, 630). They also contend that such opportunities for bypass of the regulated local exchange are affecting adversely their means to provide universal service (House 1991a, 631). Similar "cream-skimming" arguments have come from AT&T as the FCC has attempted to open access to the telecommunications system (US v. AT&T 1982, 161). The

FCC is implementing policies to increase competition in the local exchange through interconnection for competitors, to promote through a combination of cable and mobile telephone technology an alternative to the telephone company, and to offer, through promotion of direct satellite transmission and "wireless" cable, alternatives for broadcasting and cable television (Sikes 1991b, 257). The FCC has endorsed use of ultrahigh-frequency radio signals to transmit television channels to provide competition for cable television (Andrews 1992 a, A1). A major communications goal is development of a digital high-definition television standard that will place the United States ahead of Japan in provision of that technology (Sikes 1991a, 8).

Maintenance of the pre-divestiture AT&T system also could have provided the framework necessary for full development of the national broad-band digital, fiber-optic network, a primary goal of Sikes and the FCC (House 1991a, 376). AT&T's perceived market dominance had concerned antitrust officials at the Department of Justice in the 1970s and eventually brought divestiture in 1984. Huber contended in the first triennial report on the AT&T divestiture that the antitrust settlement reflected a recognition that technological advances, specifically the transistor and the microprocessor, had altered forever the nature of the telecommunications network with no single industry ever again to enjoy the regulated monopoly of an AT&T or the market dominance of an IBM (1987, 26). Huber argued that AT&T officials agreed to the 1982 antitrust settlement and divestiture in return for an influential role in the future telecommunications system (1987, 6). Judge Greene indicated in his 1982 ruling in the AT&T antitrust case that probable entry of the United States into an "information age" had to play a role in determination of the public interest:

> The only pervasive two-way communication system is the telephone network. It is crucial in business affairs, in providing information to the citizenry, and in the simple conduct of daily life. In its present form AT&T has a commanding position in that industry. The men and women who have guided the Bell System appear by and large to have been careful not to take advantage of its central position in America's economic life. There is no guarantee, however, that future managers will be equally careful. In any event, it is antithetical to our political and economic system for this key industry to be within the control of one company. For these reasons, the court concludes that the loosening of AT&T's control over telecommunications through the divestiture of the operating companies will entail benefits which transcend those which flow from the narrowest reading of the purpose of the antitrust laws (165).

Convergence of computer, telephone, and television technologies has left regulators unable to deal simply with what is left of the "natural monopoly" of telecommunications services. The FCC's initial decision not to deal with data-processing systems left a void as computer and telephone technologies merged. As former FCC Chairman Sikes noted in 1990, "But now, as computers talk to each other over thousands of miles, and the telephone system is itself becoming the world's largest computer, 'information' policy absolutely has taken on a new meaning" (32).

Regulatory policies offer governments opportunities to protect industries of key national interest, to encourage effective competition, to protect the public interest from abuse of pricing policies or discriminatory practices, and to distribute services fairly. The "natural monopoly" of telephone service allowed certain trade-offs. In return for provision of universal service, AT&T received guarantees of a monopoly on telephone service and even prohibition against interconnection of non-AT&T equipment with the regulated telephone network. The monopoly allowed economies of scale and cross-subsidization that benefited universal service at the expense of long-distance customers (US v. AT&T 1982, 169).

Through a series of FCC and court decisions and technology advances, AT&T's natural monopoly ended before the Modified Final Judgment took effect (Huber 1987, 32). Huber's contention that the telecommunications network now represents a geodesic dome more than the pyramid of customer-premises equipment, local switches, and national switches emphasizes interconnection and interoperability are keys to telecommunications network efficiency (1987, 2). Open network architecture offers the possibility of returning the telecommunications system to the integration levels of AT&T before Hush-a-Phone, Execunet, and divestiture with unlimited participation of enhanced service providers, if voluntary standards development and implementation proceed.

Efforts to promote effective competition, particularly in provision of information services, face a challenge from concerns about the future of the US telecommunications infrastructure and its role in international economic competition. Regulators faced a fragmenting telecommunications system just as the issue of international competition was coming to the forefront. Then-FCC Chairman Dennis R. Patrick told a Senate subcommittee in 1987:

> "Competitiveness" is the new buzzword in Washington. If concerns about "competitiveness" are genuine – and they should be, because our trading partners take them seriously – then we must be concerned about the telecommunications infrastructure of this nation. In the "information age" economy, effective communications technology is becoming the key productive input, second only to human capital. It plays a role previously performed by, for example, energy and transportation inputs. I believe that one of the most important ways of insuring that American firms maintain or regain their edge in world markets is to make our communications infrastructure as efficient as it can be (5).

Amid congressional debates about Bell telephone entry into information services and manufacturing in 1991, then-FCC Chairman Sikes urged members of a House subcommittee to narrow their concerns:

> Today our focus should be on removing impediments to investment in a public-switched, broad-band network. I am concerned that too little attention is paid to the key public policy issue – how best to insure that the United States begins to build tomorrow's communications infrastructure (House 1991a, 376).

With a cost for the fiber-optic network estimated as high as $250 billion and a large federal deficit, the regional Bell operating companies, which annually invest a total of approximately $20 billion in the telecommunications operations, should be key players in development of the broad-band, fiber-optic network (Swanson, 1991, 62). Incentives for such participation include removal of restrictions on telephone company entry into information services with the hope that revenue from programming content will help to offset development costs (House 1991b, 92). Concerns about cross-subsidization and discriminatory practices required some FCC action to allow the Bell companies to proceed with entry into information services. Sikes in 1987 clarified the links among these concerns: "Under the FCC's Third Computer Inquiry, open network architecture is essentially a precondition to Bell company provision of information services. It's, in effect, the entry ticket" (11).

Stalemates continue on full congressional and court approval of Bell companies' entry into provision of information services. Vice President Al Gore, a proponent of development of a fiber-optic network, has blamed inaction in development of the system on US telecommunications policies "developed for copper-wire telephone networks" and on entrenched interests that are resisting change that may lead to new competition (Gore 1991a, 16). Although Gore as a senator sponsored legislation to allow the regional Bell telephone companies to own programming for video services to encourage investment in the proposed national fiber-optic network (1991c, 1), he also has indicated that development of the network may have to come before resolution of current telecommunications disputes such as what services the Bell companies can provide: "We cannot afford to remain deadlocked. The alternative is to wait until other nations show us how to take advantage of this technology – and they will. We must move first" (1991b, 153).

A Clinton-Gore campaign proposal for technology initiatives, "Technology: An Engine of Economic Growth," includes the development of an advanced national communications network (1992, 10). The proposal calls for "funding the establishment of key networks and demonstration projects, benchmarking US programs against those of other major industrial nations, and establishing standards and a regulatory climate that fosters private sector investment" (1992, 11). Gore at the post-election economic conference in December 1992 supported greater government involvement in development of the communication network (Markoff 1993, F3).

The Bell companies' full entry into information services may come simply as a matter of technology advances with redefinition of "enhanced" services and as a new aspect of the nation's universal service goal. Maintenance of universal service and expansion of that policy to include enhanced services now pose regulatory concerns (Sikes 1990b, 318). Even then-FCC Chairman Fowler, the proponent of "unregulation," indicated in 1986 that universal service is a national goal that "precludes implementation of any regulatory policy leading to a significant decline in telephone penetration" (148). The National Telecommunications and Information Administration has proposed an Advanced Universal Service Access that would include what now are enhanced services as technology advances to bring them into the basic services category (NTIA 1991, 306). NTIA also is recommending with implementation of open network architecture that fees for basic and enhanced services reflect actual costs of providing those services and if the services require involve no real cost increase, that their prices reflect that fact (NTIA 1991, 305).

Conclusion

While open network architecture appears to be a culmination of regulatory efforts to provide access to all competitors in the telecommunications industry, the policy also is providing a justification for full participation of the regional Bell operating companies in development of a new telecommunications infrastructure. US telecommunications policy appears to have evolved from regulation of a "natural monopoly" to promotion of the development of a new fiber-optic system to replace the current "twisted-pair" network. Federal regulators appear ready to take necessary action to provide the United States with an effective and competitive telecommunications system for the "information age" even if open network architecture cannot provide a guarantee against all regulatory abuses. Trade-offs for Bell company participation in building of a fiber-optic network appear to parallel trade-offs for AT&T provision of an effective telephone system. Monopoly control provided the impetus for the AT&T system to provide universal telephone service and the challenge for its regulators. Equal access to programming control for the Bell companies provides the challenge for current and future regulators of the telecommunications system. As former FCC Chairman Sikes indicated, that control apparently is the ticket to a new communications infrastructure.

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CONSTITUTIONAL AND COMMON LAW INFORMATIONAL PRIVACY:

PROPOSING A "REASONABLE NEEDS" APPROACH FOR NEW TECHNOLOGIES

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Presented at the AEJMC annual convention, Communication Technology & Policy Interest Group, Kansas City, MO, August 11, 1993.

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Abstract

CONSTITUTIONAL AND COMMON LAW INFORMATIONAL PRIVACY:

PROPOSING A "REASONABLE NEEDS" APPROACH FOR NEW TECHNOLOGIES

As new communications technologies and information systems are rapidly being introduced, informational privacy concerns are no longer being adequately addressed by the courts. Informational privacy law is currently treated differently under constitutional law and common law. Constitutional privacy cases, for example, generally follow an "Expectation of Privacy" analysis, whereas common law cases consider the "Reasonable Person." Neither methodology, however, sufficiently addresses all informational privacy issues and needs.

A changing technological and information society has resulted in increasingly complex privacy issues. Computerized databases and enhancements in telecommunications have impacted social and economic goals while altering the perceptions of privacy infringements and the needs for privacy. The two current judicial approaches fail to confront these changing informational privacy concerns, ignoring such matters as unwanted information disclosures by third parties and the economic necessity for advancement in information technology.

This paper evaluates and compares the treatment of informational privacy law on the constitutional and common law levels. It examines informational privacy cases, offers a breakdown of elements associated with an informational privacy right, and discusses the shortcomings of the current judicial approaches. Finally, based on the criteria of the "Expectation of Privacy" and the "Reasonable Person" doctrines, a "Reasonable Needs" approach is proposed.

CONSTITUTIONAL AND COMMON LAW INFORMATIONAL PRIVACY: PROPOSING A "REASONABLE NEEDS" APPROACH FOR NEW TECHNOLOGIES

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CONSTITUTIONAL AND COMMON LAW INFORMATIONAL PRIVACY: PROPOSING A "REASONABLE NEEDS" APPROACH FOR NEW TECHNOLOGIES

As new communications technologies and information systems are rapidly being introduced, informational privacy concerns are no longer being adequately addressed by the courts.[1] Informational privacy law[2] is currently treated differently under constitutional law and common law. Constitutional privacy cases, for example, generally follow an "Expectation of Privacy" analysis, whereas common law cases consider the "Reasonable Person." Neither methodology, however, sufficiently addresses all informational privacy issues and needs.

A changing technological and information society has resulted in increasingly complex privacy issues. Computerized databases and enhancements in telecommunications have impacted social and economic goals while altering the perceptions of privacy infringements and the needs for privacy.[3] The two current judicial approaches fail to confront these changing informational privacy concerns, ignoring such matters as unwanted information disclosures by third parties and the economic necessity for advancement in information technology.

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[1] For a discussion of the development of informational privacy law, see Trubow, The Development and Status of 'Informational Privacy' Law and Policy in the United States, in INVITED PAPERS ON PRIVACY: LAW, ETHICS, AND TECHNOLOGY (1982).

[2] Although this is becoming a recognized area of law, it is important to note that there is no discrete legal discipline called "information law," rather it is so far a composite of legal concepts including torts, criminal law, contracts, personal and intellectual property and statutory law. See Trubow, Information Law Overview, 18 J. MARSHALL L. REV. 815 (1985).

[3] See, e.g., L. Thomas & R. LaRose, The Meaning of Privacy in the Age of the Intelligent Network, Paper Presented to the International Communications Association, Chicago (May 1991).

This paper evaluates and compares the treatment of informational privacy law on the constitutional and common law levels and proposes a new approach for treating informational privacy. Informational privacy cases are first examined for their character and the criteria by which they were decided in order to suggest how informational privacy interests are handled by the courts and how constitutional and common law claims receive different treatment and protection. The paper offers a breakdown of elements associated with an informational privacy right under constitutional law. It then compares these elements with those that have generally been associated with a common law tort known as "Public Disclosure of Embarrassing Private Facts." The shortcomings of the two approaches are discussed. Finally, based on the criteria of the "Expectation of Privacy" and the "Reasonable Person" doctrines, an alternate methodology is proposed.

Changing Privacy Conditions

Privacy issues have become more complex in terms of the number and types of organizations involved and the intricacy of information flows. Not only have government agencies been the perpetrators of alleged invasions, but private sector companies are engaged in the widespread collection, use, and sale of personal, identifying information. New telecommunications technologies and services have also contributed to what many consider an "assault on privacy."

The distinctions between government and private sector infringements are not as clear now, as information services and databases reach across all sectors. For example, electronic mail services operate over computer systems owned by the government, individuals, or commercial companies, with messages flowing back and forth to each, transmitted over both privately owned-networks and/or government-regulated public-switched networks.[4] Database sharing and matching is becoming commonplace, as investigative reporters, credit reporting bureaus, government welfare agencies, and others compare government tax records, private credit reports, and other computer information files. Simply buying a house, for example, may involve a search of both private sector and government databases.[5] This blurring between government and private sector information use is further complicated by jurisdictional confusions. Caller ID, for example, has raised concern over its privacy invasiveness, yet there is uncertainty over whether the service would fall under constitutional or common law because the government regulates what are otherwise privately-owned telephone networks.[6]

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[4] For a discussion of related privacy issues, see, e.g., Ware, Emerging Privacy Issues, Rand Corporation, Paper Presented at the IFIP/SEC '85 Conference, Dublin, Ireland (1985).

[5] For a related discussion, see, e.g., Rubin, The Computer and Personal Privacy, Part I: The Individual Under Assault, 17 LIBR. HI TECH 23 (1987).

In the meantime, there has been a rapid growth in new information technology, spurred partly by economic pressures to compete both domestically and internationally. Information has become an increasingly important commodity, necessary to the functioning of organizations and government. While there are demands to curb possible privacy threats, there are also demands to further technological development in order to meet larger social and economic needs for efficient information exchange.

The two different judicial tests for privacy currently employed by the courts do not meet the challenges of privacy in an information society. Both individual privacy and social needs are not fully met by the current judicial treatment which fails to fully anticipate new information technologies and services and all of the possible information linkages between business, industry, and government. The next two sections will examine informational privacy cases and provide a breakdown of these two judicial approaches and their specific shortcomings.

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[6] Constitutional privacy law is applied only when the infringer is the government, and with Caller ID, there has been little agreement over whether the service offering constitutes state action. See, e.g., Smith, We've Got Your Number! (Is It Constitutional to Give Out?): Caller Identification Technology and the Right to Informational Privacy, 37 UCLA L. REV. 145 (1989). Smith analyzes the constitutionality of Caller ID and concludes that the service evokes a constitutional right of informational privacy. But see L. Thomas & R. LaRose, I See You Calling But You Can't Come In: Telecommunications Privacy Policy and User Responses to Calling Party Information, Paper Presented at the Annual Convention of the International Communication Association, Dublin, Ireland (June 1990). Interestingly, Automatic Number Identification (ANI) provides a similar number identification service but over nonregulated long distance carriers which relieves that service from constitutional scrutiny.

Informational Privacy: Constitutional Law

The courts rarely, if ever, use the term "informational privacy" when referring to a privacy matter, but many of the cases dealing with privacy do indeed center on a concern for the seizure and disclosure of information. At a level of constitutional analysis, these types of cases generally fall within Fourth Amendment jurisprudence.[7] A constitutional privacy right is evoked when these privacy concerns involving unauthorized seizures and disclosures of information are committed by government entities, such as the Internal Revenue Service, law enforcement agencies, and government employers.

These "informational privacy" concerns at the constitutional level can be found in a number of cases. Smith v. Maryland,[8] is one of the first and best known Supreme Court cases addressing this interest. The issue here was in the protection of telephone records that the government had seized, which detailed what telephone numbers the plaintiff had dialed from his home.[9] In another leading informational privacy case, United States v. Miller,[10] a bank customer contested the lawfulness of the government's access to his checks and records at the bank. In yet another, more recent privacy case, California v. Greenwood,[11] an individual claimed that the contents of his garbage should be protected from government inspection.[12] The decision rendered, rationale given, and criteria used by the Supreme Court (and lower courts) in these types of cases indicate how the judicial system views informational privacy concerns on the constitutional level, and should suggest how future informational privacy cases will be handled.

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[7] Although the First, Fifth, and Fourteenth Amendments are also involved in some informational privacy cases.

[8] 442 U.S. 735 (1979).

[9] In this case, the telephone company used a pen register at police request to record the numbers dialed from the home of a man suspected of placing threatening calls to a robbery victim.

[10] 425 U.S. 435 (1976).

An Expectation of Privacy

In general, the courts have employed a number of tests to determine the legitimacy of a constitutional privacy right, although these approaches have largely arisen in an effort to define a single, two-part test put forth by the Supreme Court. This primary level of analysis is the "Expectation of Privacy" standard, first enunciated in Katz v. U.S.[13] and later adopted in Smith.[14] It provides a two-pronged inquiry that first asks whether the individual, by his or her conduct, has "exhibited an actual

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[11] 486 U.S. 35 (1988).

[12] It was argued that considerable information about an individual can be construed from what is discarded in the trash.

[13] 389 U.S. 347 (1967). In this landmark privacy case, FBI agents acting without a warrant attached a listening device to the outside of a public phone booth to monitor the defendant's conversation. The High Court, finding the practice to be an unconstitutional search and seizure, declared that the Fourth Amendment "protects people, not places," and adopted a stance that sought to protect a person's legitimate and reasonable privacy concerns.

[14] 442 U.S. 735.

(subjective) expectation of privacy,"[15] having shown that he or she "seeks to preserve [something] as private."[16] The second part of the analysis is whether the individual's subjective expectation of privacy is "one that society is prepared to recognize as 'reasonable.'"[17] Most adjudication has relied on the second part of the inquiry,[18] which remains the prevailing authority. Unfortunately the test has not been very predictable, being mostly defined and applied on a case-by-case basis.

This study first set out to examine a number of key privacy decisions in order to determine and outline what elements define and are currently decisive in informational privacy cases. Several major factors were found that appear to have evolved for use in determining what constitutes an "Expectation of Privacy" in information. They are:

1) whether the subject knowingly exposed the information, i.e., though a third party, and therefore assumed the risk of exposure;
2) the type of and private nature of the information involved;
3) whether there was a legitimate purpose or "compelling

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[15] 389 U.S. 347, 361 (Harlan, J., concurring).

[16] Id. at 351.

[17] Id. at 361 (Harlan, J. concurring).

[18] The first part of the test has since been de-emphasized, starting with Justice Harlan in United States v. White, 401 U.S. 745, 786 (1971). This de-emphasis has been commended, since it can be argued that subjective expectations can be eliminated by a government declaration that such expectations are no longer reasonable. See Amsterdam, Perspectives on the Fourth Amendment, 58 MINN. L. REV. 349 (1974).

government interest" for the seizure/disclosure of the information;

4) what alternatives were available;
5) whether a property right could be maintained; and
6) what precautions were taken.[19]

The following is a discussion and analysis of each of these criteria.

Cases and Criteria

The first criterion under constitutional analysis is perhaps most significant and weighed heavily in the Smith, Miller, and Greenwood informational privacy decisions. These cases relied on the language from Katz, that "[w]hat a person knowingly exposes to the public . . . is not a subject of Fourth Amendment protection."[20] This exposure does not need to be to the government directly, but may simply be through a third party. For example, in Miller, the Supreme Court held that a bank depositor has no "legitimate 'expectation of privacy'" in financial information "voluntarily conveyed to . . . banks and exposed to their employees in the ordinary course of business."[21] "The depositor takes the risk, in revealing his affairs to another, that the information will be conveyed by that person to the Government."[22] Smith began a line of cases narrowing protection, whereby the criterion is not just whether something is "knowingly exposed to the public" but whether an individual exposes the matter to any member of the public to any degree.[23] In this case, the dialing of a telephone constitutes an "exposure" made to telephone company employees. In Greenwood, exposure of information to trash collectors (and even just to children or animals) seems to suffice.[24]

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[19] It could be argued that an historical factor should be included. Justice Powell, in a concurring decision in Rakas v. Illinois, 439 U.S. 128, 153 (1978), cites the need for considering whether the Constitution's framers intended for Fourth Amendment protection to be extended to a particular area.

[20] 389 U.S. 347, 351. See supra note 13.

[21] 425 U.S. 435, 442.

Consequently, an "assumption of risk" doctrine has developed in conjunction with the exposure factor. Courts have frequently held that when a person reveals information to another party, he or she then assumes the risk that that party will disclose the information (to the government), and thus no constitutionally recognized expectation of privacy exists.[25] An exception to the risk assumption factor may be made, however, if the communications are considered "privileged," such as those between attorney and client, husband and wife, and doctor and patient. Yet this exception is limited. In Miller, the Court disregarded Miller's assertion that his documents were protected by a bank-customer evidentiary privilege, stating that the risk is assumed "even if the information is revealed on the assumption that it will be used only for a limited purpose and the confidence in the third party will not be betrayed."[26]

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[22] Id. at 443.

[23] See Serr, Great Expectations of Privacy: A New Model for Fourth Amendment Protection, 73 MINN. L. REV 583, 599-600 (1989).

[24] 486 U.S. 35, 40. The High Court found that Greenwood had "exposed [his] garbage to the public sufficiently to defeat [his] claim of Fourth Amendment protection," stating that it is "common knowledge that plastic garbage bags left on or at the side of a public street are readily accessible to animals, children, scavengers, snoops, and other members of the public." According to the Court, Greenwood had specifically deposited his garbage at the curb "for the express purpose of conveying it to a third party, the trash collector, who might himself have sorted through the respondents' trash or permitted others, such as the police, to do so."

[25] See, e.g., Hoffa v. United States, 385 U.S. 293 (1966); United States v. White, 401 U.S. 745 (1971); Lopez v. United States, 373 U.S. 427 (1963); and Couch v. U.S., 409 U.S. 322 (1973). These have been known as "false friend" cases.

Another factor that has been important in deciding informational privacy cases under constitutional law concerns the type of information involved and whether that information is entitled to be private. What is justifiably private information and what is considered "public" has been considered significant in a number of cases, with the Supreme Court finding no expectation of privacy in the exposure of basic information (such as physical characteristics of height, weight and gender). A person's voice,[27] handwriting,[28] and fingerprints[29] have been deemed to be "public" information, where the information does not reveal any personal or interpersonal information. In Smith, for example, the Court noted that information about what numbers are dialed is not private because the contents of the communication are not revealed. In Miller, the Court simply characterized bank checks and deposit slips as "negotiable instruments," which are not "confidential communications."[30]

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[26] 425 U.S. 435, 443. Nonetheless, any consideration of a privileged communication exception on a constitutional level would involve a third party who is required--and perhaps refuses--to surrender the information to the government. See, e.g., Couch v. United States, 409 U.S. 322 (1973), where petitioner Couch challenged an Internal Revenue Service summons directing her accountant to produce business records she had been giving him for preparation of her tax returns. The matter would otherwise be dealt with as a civil suit between the affected party and the third party--which will be discussed in the next section.

[27] United States v. Dionisio, 410 U.S. 1 (1973).

[28] United States v. Mara, 410 U.S. 19 (1973).

[29] Davis v. Mississippi, 394 U.S. 721 (1960).

Whether there is a legitimate purpose or "compelling government interest" for seizing or disclosing the information has also evolved as a decisive criterion in some cases. This generally involves balancing the protection of privacy with the enforcement needs and authority of the government. For example, the Supreme Court found that a person's automobile vehicle identification number (VIN) is not a private matter because of the need for government regulation and inspection of cars for safety purposes.[31] In Miller, the High Court noted that the Bank Secrecy Act (at that time)[32] had required that records be kept by banks because of their value in "criminal, tax and regulatory investigations and proceedings."[33]

Although not generally a decisive factor, some courts have also taken into consideration the availability of alternatives to the seizure and disclosure of the information. This may include alternatives available to the individual, who may have otherwise been able to avoid the "exposure," as well as alternatives available to the government, which may have been able to avoid the "invasion" of privacy. The "reasonableness" of the alternatives is a major consideration. At the individual level, the courts often consider the extent to which the information was voluntarily (or compelled to be) given. For example, in Greenwood, Justice Brennan dissented, stating that it was arguable whether Greenwood had any choice but to dispose of his refuse by leaving it on the curb because city ordinance had required it.[34] In Smith, the High Court had noted that numerical information was "voluntarily conveyed" to the telephone company, but a lower court, in a subsequent, similar case, found against the government, stating that the telephone is a "necessary component of modern life" for which there is no other realistic alternative.[35] Similarly, a California court found that financial disclosures to a bank are "not entirely volitional, since it is impossible to participate in economic life of contemporary society without maintaining a bank account."[36]

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[30] 425 U.S. 435, 442. The Court did not consider whether personal information may be revealed by the disclosure of bank checks and deposit slips.

[31] New York v. Class, 106 S.Ct. 960 (1986).

[32] 12 U.S.C. § 1829b(a)(1), superseded by The Right to Financial Privacy Act of 1978, Pub. L. No. 95-630 § 1100-22, 92 Stat. 3697-710 (1978) (codified as 12 U.S.C. §§ 3401-22).

[33] 425 U.S. 435, 443. Bank documents could be turned over to the I.R.S., for example, because of the need to curtail illegal transactions.

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[34] 486 U.S. 35, 54-55 (Brennan, J., dissenting). See also, California v. Greenwood: A Proposed Compromise to the Exploitation of the Objective Expectation of Privacy, 38 BUFFALO L. REV 647, 661 (1990).

[35] People v. Sporleder, 666 P.2d 135 (Colo. 1983). The court, despite Smith, stated that it is impossible for an individual to assume the risk of a privacy infringement when there is no other realistic alternative.

[36] Burrows v. Superior Court, 13 Cal. 3d 244, 247, 118 Cal. Rptr. 166, 172, 529 P.2d 590, 596 (1974). In Miller, however, specific alternatives--such as paying cash when an individual wishes to preserve privacy--were not mentioned, although the

The Expectation of Privacy test has also sometimes included a consideration of whether or not a property right in the information can be maintained, despite the general position that a privacy right is not dependent upon a property right. Property interests supposedly rejected by Katz[37] have since reappeared and have been used to narrow the applicability of the privacy test, such as in denying standing.[38] The Miller majority specifically refused Miller standing because he could not claim either ownership or possession of his bank records.[39] In another case, United States v. Salvucci,[40] the Court emphasized the lack of a property interest as support for their conclusion that a defendant possessed no legitimate expectation of privacy. The Court noted that "property

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Supreme Court did seem to imply that such alternatives exist when it noted that financial information is "voluntarily conveyed" to the banks (425 U.S. 435, 442).

[37] Generally, the Expectation of Privacy doctrine was developed by the Supreme Court in Katz as a vehicle to circumvent the ownership and possession requirement previously necessary to protect Fourth Amendment interests. At least the Katz Court considered a phone booth to be a temporarily private place (389 U.S. 347, 352-3).

[38] For example, in Rakas v. Illinois, 439 U.S. 128 (1978), petitioners claimed a violation of their Fourth Amendment privacy rights when a car was searched and rifles and shells were seized. The Supreme Court said the petitioners lacked standing to exclude the evidence because they did not own the car or the guns.

[39] 425 U.S. 435, 440. This was the decision, although it has been argued that it is the information contained within the records which is the property of the depositor, not the books themselves. Brex v. Smith, 104 N.J. Eq. 386, 146 A. 34 (1929); Zimmerman v. Wilson, 81 F.2d 847 (3d Cir. 1936), but reversed in Zimmerman v. Wilson, 105 F.2d 583 (3d Cir. 1939).

[40] 100 S.Ct. 2547 (1980).

rights are neither the beginning nor the end of the Court's inquiry."[41]

Finally, some courts have evaluated an Expectation of Privacy in terms of the precautions that could have been taken, either by the individual or the government "infringer." This factor is usually addressed only on a case-by-case basis and may only be considered indirectly, although it bears weight in the first part of the two-pronged inquiry which asks whether an individual has shown that he or she seeks to preserve something as private. For example, the Miller Court implicitly faulted the depositor Miller for failure to protect his privacy interest,[42] and similarly criticized the petitioner in Smith for not calculating to preserve the identity of the numbers he dialed. The High Court continued this line of reasoning in Greenwood, although it may be arguable whether Greenwood's use of an opaque, rather than transparent, trash bag demonstrated a subjective expectation.[43] On the other hand, the Court has considered the precautions taken by the government in Whalen v. Roe[44] to have been adequate. In Whalen, the Court found no invasion of privacy because a law had been created that carried adequate safeguards to protect the information being gathered and stored by the government from possible, embarrassing disclosures.

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[41] Id. at 2553.

[42] 425 U.S. 435, 442.

[43] See California v. Greenwood: A Proposed Compromise to the Exploitation of the Objective Expectation of Privacy, supra note 34, at 651, n.20.

[44] 429 U.S. 589 (1977). Whalen involved a privacy-based challenge to a New York law which required state officials to collect information about patients' use of certain prescription drugs such as opium and cocaine. The plaintiffs had alleged that some people who needed such drugs would decline treatment out of fear that the information gathered would be misused.

It is important to note that these six criteria for determining an informational privacy right under constitutional law primarily stem from the issue of government seizures of information, and not disclosures. Aside from two cases in 1977--Whalen and Nixon v. Administrator of General Services,[45] the High Court has not attempted to determine a right of privacy against disclosures by the government. These two decisions as well as a related one in Paul v. Davis,[46] only touch on the subject, and do not clearly address such a right or lack of right.[47] The High Court has so far refused to expand constitutional privacy rights broadly into information policy areas. Disclosures of information to the government by a third party may generally be unprotected, but whether disclosures by the government are protected is still relatively unknown.

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[45] 433 U.S. 425 (1977). Nixon concerned the release of papers of former President Nixon to government archivists to review and classify.

[46] 424 U.S. 693 (1976). In Paul v. Davis, the Supreme Court rejected a plaintiff's claim that a police department's circulation of a flier depicting him as a shoplifter (when he had only been arrested and not convicted) had deprived him of procedural due process. This type of government disclosure of information was considered to be "very different" from "fundamental" privacy rights such as those related to procreation and family.

[47] In both Whalen and Nixon, the Court determined that the risk of public disclosure of the information at issue was too minimal to warrant consideration, and therefore dealt only with the intrusion upon privacy caused by the information gathering itself. Of course Whalen and Nixon may be read by courts in a broad sense to include an informational privacy right in limiting the government's subsequent dissemination of personally identifying information. It can be argued that in both cases, the plaintiffs' genuine concern was not with the mere disclosure to the government, but rather that the information would become known to the public and harm their reputations. Even so, the Court specifically limited Whalen to its facts, providing little support for a broad disclosure privacy interest.

It is also important to reiterate that informational privacy cases addressed as a question of constitutionality necessarily involve the government. "Seizures" and disclosures of information by private entities, such as telephone companies (should they be deemed as private), would be a matter of common law. Thus, the character of informational privacy cases under common law is also examined and is discussed next.

Informational Privacy: Common Law

A common law privacy right is not limited to government invasions, but rather concerns the actions of the private sector. This type of privacy right is not found in the Constitution, but is instead derived from case law,[48] which tends to reflect the prevailing philosophy of the courts. Here, the law is applied to specific privacy tort actions, which are private or civil wrongs (like battery and defamation) for which one party sues another for compensatory damages.

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[48] Unlike similar suits based on contractual promises, tort suits are based on a set of pre-existing rights and duties recognized (understood and defined) by the courts.

The "Reasonable" Person

The primary level of analysis for privacy cases under common law is the "Reasonable Person" doctrine, rather than the "Expectation of Privacy" analysis.[49] In this sense, the common law right of privacy is relative to the customs of the time and place and is determined by the norm of the ordinary person.[50] Protection is restricted to ordinary or "reasonable" sensibilities, and not "hypersensitiveness." Essentially, a privacy matter must be of such a nature to cause a reasonable person to conclude that mental distress and injury would probably be suffered by an individual possessed of ordinary feelings and intelligence, situated in like circumstances. The matter constituting an invasion of privacy must in fact be "highly offensive" to the "reasonable person."[51]

This area of privacy law has already been conveniently analyzed and broken into specific categories by Dean William Prosser.[52] Prosser's category of "Public Disclosure of

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[49] Although expectations are sometimes considered in these civil or tort suits.

[50] 62 AM. JUR. 2D Privacy § 40 (1990).

[51] The RESTATEMENT (SECOND) OF TORTS §§ 652B, D, and E (1977) explicitly requires this for most torts. Some courts have applied or recognized an even more stringent requirement of "outrageous conduct," where the conduct must be so outrageous in character and so extreme in degree as to go beyond all possible bounds of decency and be regarded as atrocious and utterly intolerable in a civilized community. Id.

[52] In 1960, Dean William Prosser synthesized hundreds of cases recognizing a right of privacy actionable in tort. See Prosser, Privacy, 48 CALIF. L. REV. 383 (1960). Prosser's widely accepted analysis breaks down the privacy invasion lawsuit into four separate torts: 1) Appropriation, for the defendant's advantage, of the plaintiff's name or likeness, 2) Publicity which places a person in a false light in the public eye, 3) Public disclosure of

Embarrassing Private Facts" best reflects the general interests of informational privacy, although it does not directly apply to some information services.[53] Unlike constitutional law, the common law action does not deal much with the "seizures" of information, which may be better handled by criminal laws governing theft. But the common law does address some of the privacy concerns of subsequent disclosure, not met by constitutional law.

For example, in Montinieri v. Southern New England Tel. Co.,[54] an interest in informational privacy was at stake when a telephone company released the telephone number and address of an unlisted subscriber. In another common law case, an insurance company disclosed the plaintiff's insurance records to an independent consumer reporting firm.[55] Even disclosures of hospital admissions and birth records have been the subject of privacy suits,[56] directly stemming from an interest in preserving private information.

Unlike privacy under constitutional law, scholars have categorized the tort classifications into the basic elements which

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embarrassing, private facts about the plaintiff, and 4) Intrusion upon the plaintiff's seclusion or solitude, or into his private affairs.

[53] Such as Caller ID, which involves a disclosure of information to the called party, and not to the public at large--a requisite for this tort claim.

[54] 175 Conn. 337, 398 A.2d 1180 (1978).

[55] Tureen v. Equifax, Inc., 571 F.2d 411 (8th Cir. 1978).

[56] Wooster Republican Printing Co. v. City of Wooster, 56 Ohio St. 2d 126, 383 N.E.2d 124 (1978); and Koudsi v. Hennepin County Medical Center, 317 N.W.2d 705 (Minn. 1982).

seem to constitute an invasion. In sum, the "Public Disclosure of Private Facts" tort has evolved to include the following specific conditions:

1) whether the information was disclosed to the public;
2) the type of facts disclosed--whether private or public in nature; and
3) whether the matter would be offensive and objectionable to a reasonable person of ordinary sensibilities.

Further analysis of informational privacy cases under common law reveals two other somewhat less controlling elements:

4) whether there was a legitimate public concern warranting disclosure; and
5) whether the disclosure was privileged.

Because these informational privacy criteria under common law have been examined elsewhere,[57] discussion of each of these criteria will be brief.

Cases and Criteria

The first criterion for this type of privacy tort is public disclosure or "publicity," whereby the matter must be disclosed to the public in general or to a large number of persons, as opposed to one or a few individuals. In Tureen v. Equifax, Inc.,[58] for example, disclosure of insurance information by an insurance company to an independent consumer reporting firm did not constitute an invasion of privacy because the information was not disclosed to the public.[59] Courts have also held that the disclosure of private facts to relatives or an employer,[60] an employee's union,[61] to a small group of co-workers,[62] or to employees at staff meetings,[63] is insufficient to constitute an unlawful privacy invasion.

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[57] See, e.g., supra notes 50, 51, and 52.

[58] 571 F.2d 411.

The type of information disclosed--whether private or public in nature--is also an important criterion in common law informational privacy cases. Just as in the constitutional privacy case Miller,[64] a lower court rejected a tort privacy claim against a bank for releasing a customer's bank records to the customer's employer, finding that the information was not a confidential communication, but rather an instrument of commercial trade.[65] Some facts about the use of public health care have also been found simply "unimportant" enough to warrant anonymity, such as the name and address of the subject, and the fact of admission and discharge.[66] Of course, a common law right of privacy is also not infringed by the publication of matters of public record, such as arrest records[67] and the filing or granting of a divorce.[68]

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[59] Similarly, disclosure by a university to a state scholarship and loan commission of grades that the plaintiff had earned prior to transferring to the school was not considered to be a communication to the public in general. See Porten v. University of San Francisco, 64 Cal. App. 3d 825, 134 Cal. Rptr. 839 (1976).

[60] Vogel v. W.T. Grant Co., 458 Pa. 124, 327 A.2d 133 (1974). In this case, a retail store's customer account information was released to the customer's relatives and employer.

[61] David v. Monsanto Company, 627 F. Supp. 418 (S.D. W. Va. 1986).

[62] Dzierwa v. Michigan Oil Co., 152 Mich. App. 281, 393 N.W.2d 610 (1986).

[63] Wells v. Thomas, 569 F. Supp. 426 (E.D. Pa. 1983).

[64] 425 U.S. 435.

[65] Adams v. Trust Co. Bank, 145 Ga. App. 702, 244 S.E.2d 651 (1978). The court in fact relied on Miller, in what some consider to have been a confusion between constitutional law and tort law. See 1 G. TRUBOW, PRIVACY LAW AND PRACTICE 3-57 (1991).

The standard of the "Reasonable Person" is key to the third criterion. Many courts have stressed that for a privacy claim to be actionable, it must be offensive and objectionable to a reasonable person of ordinary sensibilities, and with an action for public disclosure, emotional distress and embarrassment must be found. For example, in Wood v. National Computer Systems, Inc.,[69] a court held that the erroneous mailing of a score on a teacher certification test was not a disclosure of a "highly objectionable" kind.[70] Similarly, in Montinieri,[71] when an unlisted telephone subscriber's address was disclosed, the unintentional disclosure by the telephone company was found reasonable. In debt-collection cases, disclosure of a debtor's nonpayment status to his or her employer is reasonable (for the purpose of setting up payroll deductions);[72] however, some courts have found a cause of action when the debtor is subjected to public contempt, insult, and ridicule.[73]

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[66] Wooster, 383 N.E.2d 124. Even the news of a birth may be released by a hospital, despite the maternity patient's request for anonymity. Koudsi, 317 N.W.2d 705.

[67] Alarcon v. Murphy, 201 Cal. App. 3d 1, 248 Cal. Rptr. 26 (1988).

[68] Aquino v. Bulletin Co., 190 Pa. Super 528, 154 A.2d 422 (1959).

[69] 814 F.2d 544 (8th Cir. 1987).

[70] The score was mailed by mistake to another teacher and was considered to be a good score.

[71] 175 Conn. 337, 398 A.2d 1180.

Another element considered by some courts in deciding common law informational privacy cases is whether there was a legitimate public concern warranting disclosure.[74] In general, the plaintiff's status as a private citizen or public figure (or limited public figure) has had some relevance, as well as the extent of the relationship between the information disclosed and the alleged purpose of the disclosure. For example, in Bilney v. Evening Star Newspaper,[75] an appellate court ruled that the release of the academic records (to determine eligibility) of members of a basketball team was reasonable because the sport was of great interest to the university and the players were public figures.

Finally, some courts in informational tort cases have considered whether the disclosure was "privileged." In this sense, the courts have considered whether the disclosure was made to persons having a legitimate interest in the information--in which case there would be no liability.[76] In Senogles v. Security Ben. Life Ins. Co.,[77] for example, a court concluded that an insurer had an interest in medical information which it was obligated to forward to a centralized data bank; thus an invasion of privacy action was unsuccessful.

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[72] See, e.g., Hawley v. Professional Credit Bureau, 345 Mich. 500, 76 N.W.2d 835 (1956). Reasonableness was also found in the release of employees' names and addresses to a labor organization. NLRB v. British Auto Parts, Inc., 266 F. Supp. 368 (C.D. Cal. (1967), aff'd, 405 F.2d 1182 (9th Cir. 1968), cert. denied, 394 U.S. 1012 (1969).

[73] See, e.g., Tollefson v. Price, 247 Or. 398, 430 P.2d 990, 33 A.L.R.3d 149 (1967).

[74] Samuel Warren and Louis Brandeis--who first articulated an interest in a right of privacy--specifically acknowledged this interest when they wrote in a well-known law review article that "[t]he right to privacy does not prohibit any publication of matter which is of public or general interest." Warren & Brandeis, The Right to Privacy, 4 HARV. L. REV. 193, 214-15 (1890).

[75] 43 Md. App. 560, 406 A.2d 652 (1979).

The Need for a New Standard

A comparison and assessment of these constitutional and common law standards and these specific criteria reveal a number of problems which need to be addressed in light of recent information technology development. One issue concerns the need for having two different standards--Expectation of Privacy and Reasonable Person--which address privacy using different approaches with different results, generally lacking uniformity. The analyses themselves also suffer from specific inadequacies which need to be remedied as future informational privacy matters are adjudicated.

A lack of Uniformity

The first concern centers on a marked disparity and lack of uniformity in the treatment of informational privacy cases under constitutional law and common law. Of course a number of similarities can be found--and indeed an attempt was made here to demonstrate this agreement where appropriate for comparison and clarity.[78] Yet the two different methodologies vary considerably in their approaches to addressing privacy complaints, which can greatly impact the decision rendered in a case.

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[76] According to the Second Restatement of Torts, privilege occurs when there is information that affects a sufficiently important interest of the recipient or a third person, and/or the recipient is one to whom the publisher is under a legal duty to publish. RESTATEMENT (SECOND) OF TORTS § 595(1) (1977)

[77] 217 Kan. 438, 536 P.2d 1358, 98 A.L.R.3d 550 (1977).

The greatest and most obvious difference in the treatments is found in the fundamental standard applied. Cases evoking a constitutional right will be primarily subjected to the Expectation of Privacy test, and civil suits will be primarily subjected to the Reasonable Person standard. Here, the Expectation of Privacy test will rely on the plaintiff's own assessment (expectation) of the infringement, while the Reasonable Person standard instead turns to the judgement of an unknown, "average" person.[79] The Expectation of Privacy test will also ask not only if the plaintiff had expected privacy, but if society would agree; the Reasonable Person inquiry will not.

Further analysis shows that the standards under the Reasonable Person test tend to be somewhat less rigid (and thus might make it harder for a plaintiff to win) than in constitutional cases. In common law cases, the plaintiff must show that an infringement was "offensive" or "objectionable." Moreover, to be actionable, the exposure must have been to a large group--the public--which is not a requirement under constitutional law. When the government is the infringer, alternatives and precautions are sometimes considered, and the government's purpose for the infringement must generally be "compelling"--associated with law enforcement and safety needs, for example, and not just public curiosity or newsworthiness. On the other hand, it does not matter if a plaintiff in a common law suit had knowingly exposed the information and assumed the risk, since this is not a decisive criterion. Plus, a lack of proof of ownership in the information may not be as relevant in a common law case.[80]

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[78] Both areas of law, for example, consider the type of information involved, and both give some consideration for whether or not a communication was privileged. Also, the fact of information exposure is similar--be it to the government or the public. Likewise, both consider the concern and purpose involved, in one case associated with the government and the other with the public.

[79] Of course this distinction is not absolute; reasonableness is a consideration in constitutional privacy cases and privacy expectations are acknowledged in some common law cases.

Why are there necessarily two different standards and treatments followed by the courts? Not surprisingly, in cases giving rise to a constitutional privacy question, the actions of the government are at issue, and those actions will be subject to considerable scrutiny when weighed against the fundamental rights of the citizenry. Yet, how a case is ultimately decided could partly depend on whether it was brought under constitutional or common law. As the boundaries of information exchange between government and private sectors blur, the application of the appropriate source of law and jurisdiction could teeter on a determination of whether or not the infringer is considered a government entity (or even merely associated with government to the extent of warranting state action). For example, are government regulated telephone companies a private company or a government entity? Moreover, which standard would be used in deciding cases that involve both government and private sector parties and the future of information technologies and services? Would the courts apply the same criteria? More uniformity in treatment in this area may be due.

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[80] Privacy torts may also be more successful for the plaintiff simply because they are more likely to end with a decision by a jury, which tends to sympathize with the injured.

Inadequacies, a Circular Analysis, and Social Needs

In addition to the disparity in treatment, there are several problems with the Expectation of Privacy and Reasonable Person doctrines and some of the specific criteria followed. In the first place, the Reasonable Person test is inadequate for addressing all types of tort informational disclosure cases. Its conditions, as defined by precedent, are limited, excluding some disclosures. The analysis considers the reasonableness of disclosures made only to the public at large, rather than to one or a few individuals. This is not an isolated concern, but a much larger problem with the advent of computerized record-keeping. For example, if one's criminal record was disclosed to a future employer, or if one's medical record was disclosed to a prospective insurance carrier, there is a general consensus that the existing tort law would not provide a remedy.[81] Caller ID presents another example where a caller's identity is disclosed only to one other party, while the privacy law requires that for a claim to be actionable, the information must be communicated to the public at large. The use of electronic mail, voice mail, and computerized bulletin boards further complicates this definition of "public."

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[81] See Cantu, Privacy, 7 ST. LOUIS U. PUB. L. REV. 313 (1988).

For the same matter, the Expectation of Privacy test is going to become more difficult to apply if the inquiry hinges on whether the plaintiff knowingly exposed the information. This criterion seems to be extended to include circumstances in which the plaintiff should have known or assumed the information would be collected or disseminated. Yet how can anyone know or be certain of anonymity anymore? The Supreme Court in Smith,[82] for example, found that the plaintiff should have realized that dialing a phone would result in an exposure of information to the telephone company which might subsequently release the information about what numbers were dialed. This conclusion is still controversial,[83] and with newer and more complicated technologies, this criterion becomes problematic. Knowing whether one has released private information to the government, much less indirectly through a company or a single individual, will be difficult--and even difficult to ascertain. Indeed, many people still do not realize that their identities are released when they call the 800/900 numbers of companies subscribing to an Automatic Number Identification (ANI) service. Would using a cellular phone or tomorrow's personal communications service (PCS) constitute a known exposure of one's location?[84] Should tomorrow's information service subscribers be expected to assume the risk that the government might trace their electronic banking transfers, home shopping purchases, and video-on-demand selections? Would sending an electronic mail message to a colleague over the Internet constitute an exposure to the government? While the criterion is important--especially for thwarting frivolous lawsuits filed by victims intending to cry fowl--it should be less controlling and its application reconsidered in light of complex information systems.[85]

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[82] 442 U.S. 735.

[83] See related case, supra note 35.

Another problem with the Expectation of Privacy analysis is that it is circular. The question of whether an individual has a reasonable Expectation of Privacy is circular because the individual cannot reasonably have such an expectation unless the court has first recognized the right to be free from a particular intrusion.[86] Katz suggests that an expectation is what is expected under the law.[87] In fact, Justice Harlan, who developed the two-pronged test, later said in United States v. White[88] that "our expectations and risks assumed are reflections of laws that translate into rules the customs and values of the past and present."[89] The test basically suggests that the law is what is expected, but that what can be expected is the law. As a result, the test cannot adequately anticipate and accommodate technological advances. In a sense, new information technologies and services may never become available because they would fail the Expectation of Privacy standard simply because they were not "expected." Moreover, they would never become "expected" because the law would prohibit them and keep them off the market. In this sense, the test presents a circular analysis that could impede the development of new information technologies.[90]

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[84] Records may be produced by telecommunications carriers that would reveal a cellular phone subscriber's travel path by using data on which cells were activated. Similarly, with PCS--the next wave of wireless technology--records may be produced to identify the specific location of a subscriber's phone.

[85] In addition, more weight may need to be given to the alternatives criterion and the ability to take precautions if fewer options are available or understood in the future, particularly in light of a proposed national, integrated, electronic superhighway and its complexities.

[86] See Seng, The Constitution and Informational Privacy, Or How So-Called Conservatives Countenance Governmental Intrusion Into a Person's Private Affairs, 18 J. MARSHALL L. REV. 847, 886 (1985).

[87] 389 U.S. 347.

Finally, the Reasonable Person test as a whole (and to some extent the Expectation of Privacy test) is restricted to a narrow assessment of only the "reasonable person" and excludes consideration of larger social interests and needs. The tort law analysis only weighs the individual view relevant at the time of the infringement, ignoring a broader consideration of the public interest, needs, and social consequences. For example, the "Reasonable Person" standard would not consider needs for technological advancement, economic efficiency, and global competitiveness. Would the "reasonable person" be expected to take into account the possible enhancements to society created by a free flow of information and access to information resources? It is not likely, since the inquiry focuses more on whether the "reasonable person" would find an infringement "highly objectionable." Granted, the "reasonable person" may, to some extent, be representative of the general public interest and social norms;[91] even so, this still only represents a snapshot view and not the larger picture, taking into account society's interests, needs and goals. Essentially, the "Reasonable Person" analysis is narrow, neglecting a long-term social perspective.

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[88] 401 U.S. 745 (1971).

[89] 401 U.S. 745, at 750.

[90] Benner suggests a "Reasonable foreseeability" approach which touches on one aspect of this problem. He suggests that the courts ask whether a risk of public observation was "reasonably foreseeable;" if so, then it can be inferred that the plaintiff was aware of the risk and would therefore have no legitimate expectation of privacy. The approach does not, however, address society's assessment of reasonableness and concerns for social utility. See Benner, Diminishing Expectations of Privacy in the Rehnquist Court, 22 J. MARSHALL L. REV. 825, 871 (1989).

This perspective is essential when the informational privacy tort and its application in effect impact and can ultimately control the diffusion of information throughout an entire society. On the one hand, a lack of legal protection of information might have certain social costs, such as those associated with transactions based on incorrect information. On the other hand, judicial constraints on a new technology or service to protect individual informational privacy interests might inhibit future growth and development. Of course, the legitimate public concern criterion addresses this concern to some extent, but it does not go far enough[92] in that it does not extend to broader economic purposes or public interest needs such as continued infrastructure development and technological progress. The compelling government interest criterion used to justify government infringements under constitutional law also falls short, since it is generally associated with safety, national security, and regulatory enforcement needs, not general economic and social welfare needs, much less any future needs of society.

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[91] The "reasonable person" has been considered a representation of "the normal standard of community behavior" who embodies "the general level of moral judgment of the community . . . ." Post, The Social Foundations of Privacy: Community and Self in the Common Law Tort, 77 CALIF. L. REV. 957, 961 (1989). In this sense, the law regards the privacy tort as simultaneously upholding social norms and redressing "injury to personality." (at 963)

The Expectation of Privacy test does account for both individual and societal interests, but it also only accounts for past and current considerations of what may have been reasonably expected at the time of the infringement. The test is nonetheless broader in scope than the Reasonable Person test, in that it considers a larger, societal assessment of an expectation; in fact, it relies mostly on this broader part of the two-pronged expectation inquiry. Unfortunately, the test is also limited to what was merely "expected" and to a set of given circumstances. The Supreme Court in Smith acknowledged that the Expectation of Privacy analysis may be inadequate and suggested that a "normative inquiry" would be better.[93] Even so, the inquiry is based on a snapshot view, albeit one of society's, grounded in an analysis limited to past and, at most, current societal expectations.

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[92] It is generally employed to justify the dissemination of information deemed "newsworthy."

[93] 442 U.S. 735 (1979).

A "Reasonable Needs" Approach for New Technologies

A new approach for weighing privacy interests is needed. Any new approach should continue with the assessments of personal "reasonableness" and society's view of reasonable privacy. Yet in a fast-paced, technological and information age, a new standard must also be flexible enough to have foresight, anticipating technological advancements and social and individual needs and goals. Clear guidelines for comparing different privacy issues are necessary, as privacy interests will more likely come in conflict with new services. One standard with one set of criteria would reduce ambiguity and provide a clearer, better-defined means for adjudicating privacy infringement claims involving new information services.

This study proposes a "Reasonable Needs" approach as a new methodology to simplify the balancing and to account for the current inadequacies. A Reasonable Needs approach would offer an overall standard for weighing and balancing individual and social needs. In short, this standard would weigh, balance, and protect individual privacy interests that are deemed reasonable and needed, while also taking into account the needs of society as a whole. Instead of relying primarily on an assessment of an individual's expectations or what a "reasonable person" would find objectionable, the new standard would consider the relevant needs associated with a privacy matter.[94]

The inquiry would essentially ask whether an area really needs protection and if there is any social need or larger social good that is great enough to justify a privacy invasion. It would first consider the individual privacy needs such as human dignity, self-fulfillment, and the establishment and maintenance of personal relationships; indeed, these types of concerns are at the heart of privacy law. It would also consider the changing nature of these individual needs and how they might be met. The standard would then consider and weigh the infringer's needs and the general interests and needs of the community as a whole--needs that are currently overlooked--such as a general societal interest in preserving the information flow that resulted in the "invasion." In this sense, technological development, economic efficiency, and global competitiveness might be considered, as well as issues of safety, security, comfort, and convenience. These needs would then be weighed and balanced against the needs of the individual.

The new approach would offer several specific advantages. First, it would give the courts an opportunity to reassess the existing criteria and even apply new criteria where necessary. The Reasonable Needs approach, which would serve as a very broad standard for adjudicating informational privacy cases, would still consist of certain criteria by which to further determine a case. Here, elements of the two existing standards could be merged to take advantage of their specific attributes,[95] while addressing and accounting for their problems. For example, the new standard could benefit from both a general consideration of whether a plaintiff knowingly exposed the information, as well as whether it was "objectionable" to a degree. The legitimate purpose and public interest criteria could be merged and expanded to include an assessment of broader societal interests and needs. The alternatives available and precautions taken could also be considered in civil suits and perhaps be given more weight, as they are assessed for their reasonableness. Perhaps most importantly, the new approach could set a standard for information disclosures made by government infringers at the constitutional level while also providing a tort law remedy for disclosures that are made not only to the public at large, but to certain individuals or small groups.

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[94] In a sense, a consideration of the needs involved is a simple standard for what is intuitively followed when balancing interests. The standard then goes further by recognizing the public interest and social needs as part of the balance.

Secondly, the new standard would provide uniformity across constitutional law and tort law privacy analyses, reducing the confusion (and possible inequity) created by having two different standards by which privacy interests are measured. Granted, the Expectation of Privacy analysis is used at the constitutional level because the privacy infringer is the government and society must be considered. The common law Reasonable Person test, on the other hand, considers the reasonable interests of the individual, obviously because the cause of action involves private entities. Yet by merging these interests, the disparity in treatment across constitutional and common law levels might be reduced--especially where infringement actions and the boundaries between legal jurisdictions blur. In addition, both individual and society interests could be taken into account at both levels. This is especially important at the level of common law where society's interests are largely ignored, and the private interest is the only part of the analysis. The new standard could also provide uniformity across the various other privacy interests within both areas of law. It may also be useful for other non-privacy torts, as well as for aligning the law of privacy with various other torts.[96]

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[95] In this sense, the new standard would not have to disregard precedent and could rely on this precedent where appropriate.

Thirdly, the "Reasonable Needs" standard would retain the test of reasonableness, an important ingredient in a judicial balancing of rights. The standard is simple and easy to apply, plus it is flexible for use over time which is critical in light of rapid technological changes and societal attitudes. In this regard, the standard would remain adaptable to changing conditions.

Fourthly, the new standard would consider the values and interests of not only the individual, but also the collective. The standard expands considerably on the Expectation of Privacy analysis by not only looking at what society perceives as reasonable (and its corresponding norms and customs) but by also acknowledging social values and interests. The Supreme Court decision in Oliver v. United States,[97] in fact, embodied some of this thinking when the Court considered a "new" inquiry in determining the legitimacy of a privacy expectation (without overruling Katz[98]). The new inquiry examined whether the government's intrusion infringes upon the personal and societal values protected by the Fourth Amendment. In this case, which concerned privacy in open fields, the Court rejected an examination of specifics (i.e., the height of a fence and the existence of a "No Trespassing" sign) and focused instead on the lack of a societal interest in protecting activities "such as the cultivation of crops, that occur in open fields."[99] By addressing social values and interests, the Reasonable Needs approach would, in a sense, recognize this inclination by the Court to balance privacy interests against social interests.

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[96] Cantu (See supra note 81) proposes a "Reasonably prudent person" standard which focuses on the reasonableness of the conduct or activity under the circumstances in question. Although narrow in scope, his analysis does cite the inadequacy of the disclosure tort and a desire for aligning of the privacy rule with other torts which adhere to the concept of reasonableness. These torts include defamation, fraudulent misrepresentation, assault and battery, and private nuisance.

The new standard would then go further by adding a needs-based analysis for recognizing and balancing individual and social needs and goals. The inquiry would not consider just what "society is prepared to recognize as reasonable," for example, but what must be recognized as reasonable for the furtherance of not only private but social goals. This would mean that the courts may consider in addition to the private needs or purpose, the larger social impacts of the privacy infringement and associated needs. In this regard, privacy as a social value may be balanced against social utility[100] and other social values and needs such as the public's right to know and freedom of speech, as well as the economic efficiency of commerce,[101] and social advancement in research and development. With new information technologies and services, the courts may therefore consider the long-term implications of the privacy invasions at stake and how these affect not only the individual, but society as a whole. Privacy in an organized society cannot be obsolete; it must also take into account and be balanced against the needs of the collective. This focus on the "needs" for privacy looks beyond the simple interests in privacy. The approach also has an additional advantage of diminishing the risks of variations solely due to individual attitudes and expectations (as associated with either the Expectation of Privacy test or Reasonable Person test).[102]

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[97] 466 U.S. 170 (1984).

[98] 389 U.S. 347.

[99] Id. at 179. See also Libeu, What is a Reasonable Expectation of Privacy, 12 W. ST. U. L. REV. 849, 856 (1985).

Finally, this standard is forward-looking as it considers potential "needs" and can anticipate new technology. The circularity of the Expectation of Privacy analysis is circumvented by removing the narrow "expectation" criterion that restricted constitutional privacy analyses to an assessment of only past or current expectations, specific to the case at hand. A needs-based standard would be able to anticipate and offer a remedy in new areas not currently contemplated or "expected" and would thus account for not only short-term interests, but also long-term needs and goals. Of course, what is needed would be continually re-examined and re-articulated as information technology and society continue to advance and future privacy cases are brought.[103] Such interests will likely change with shifting social, political, and economic conditions (including technological development), and these needs will adjust accordingly.[104]

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[100] But see Crowley & Johnson, Balancing and the Legitimate Expectation of Privacy, 7 ST. LOUIS U. PUB. L. REV. 337, 358 (1988). Crowley and Johnson argue against undercutting privacy interests by appeals to social utility.

[101] See Meldman, Privacy Expectations in an Information Age, 302 EKISTICS 392 (1983).

[102] See Tomkovicz, Beyond Secrecy for Secrecy's Sake: Toward an Expanded Vision of the Fourth Amendment Privacy Province, 36 HASTINGS L. J. 645, 698 (1985). Tomkovicz mentions that the language of the Expectation of Privacy standard should be "supplanted by the terminology of 'needs for privacy.'" He explains that the central issue is best formulated not in terms of what people expect or are entitled to expect from the government, but rather what people need to enjoy guaranteed rights and interests.

Conclusions

Thus, a "Reasonable Needs" approach could meet the conditions presented by new information technologies and services that create new privacy infringements. The standard goes beyond the understanding that a certain area, i.e., activity or document, deserves protection. It would provide for a broader examination of the need for new information technologies and services in an age of global information exchange and technological competitiveness.

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[103] The standard could even assume a classical utilitarian approach, basing decisions on calculated future consequences. See, Crowley, supra note 100, at 348.

[104] For example, while Caller ID presents a change to existing privacy needs, the advent of blocking changes this needs relationship, and the addition of a "Block-Block" service may further alter privacy needs.

The standard would apply to all privacy interests at stake and could be used at either the common law or constitutional level. By incorporating the current Expectation of Privacy and Reasonable Person tests, the standard could anticipate the long-run implications--advantages and disadvantages of information services, while also accounting for the individual, changing needs for informational privacy. The inquiry may further explore the impacts on society as the needs for privacy and their conditions are affected or changed.

What happens when information privacy becomes limited by a new technology or information service? How should the development of that technology or service be guided? Hopefully, the courts, after a reassessment of their current judicial methodologies, will be better able to address these questions.

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The Use of Key-Capture and Pausal Methodology to Examine the Individual Journalistic Ethical Decision-Making Process

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Paper presented to the Communication Technology and Policy interest group of the Association for Education in Journalism and Mass Communication's annual meeting, Kansas City, Mo., Aug. 13, 1993.

While reporters may strive to obtain the best version of the truth when writing a story, they are certainly limited by the reality that "the reporter not only relates stories but makes them."[1] This age-old subjectivity/objectivity question is due to the obvious fact that the journalistic account of an incident is a combination of the incident itself and the performance of those involved in its production.

When writing a news story, the reporter faces an array of questions: Which sources do I interview? Which quotes do I use? How do I word the paraphrases? What information do I include/leave out? etc. When the subject matter is sensitive and has the ability to go beyond the printed page and negatively affect readers, these questions become ones of ethical concern.

Christians et al. illustrate the journalist's individual ethical decision-making process with their discussion of The Potter Box. The journalist here makes a decision based on values, principles and loyalties.[2] Rivers and Mathews modify this by merging the "values" and "principles" components into a single idea they term "beliefs," which "covers one's ethics---one's views of right and wrong that have come from experience and education."

They combine Potter's "loyalty" component with the "effect of an ethical decision on those to whom one is loyal." The final step in this process is the "decision, but it is made by weighing its likely impact against one's beliefs about right and wrong." They term this the "Justified Final Decision" because "justification of questionable behavior is what ethics is all about."[3]

Elliott explains that journalists have certain responsibilities underlying their various decisions, including the responsibility of informing society of the matters that are of interest to them in a way that "will not lessen public trust in the profession of journalism" and always in a manner that avoids causing unnecessary harm.[4]

Patterson and Wilkins, explain that ethical decisions are more about the "conflict between equally compelling (or equally unattractive) values and the subsequent choices that must be made between them, than it is about the "conflict between right and wrong." Ethics is not synonymous with moral systems, though. "Ethics begins when elements within a moral system conflict." Ethical decisions revolve around the following questions: "What duties do I have, and to whom do I owe them?" and "What values are reflected by the duties I've assumed?" They illustrate the ethical decision-making framework introduced by Bok, explaining it is based on basically two premises: "that we must have empathy for the people involved in ethical decisions and that maintaining social trust is a fundamental goal."[5]

Hulteng sees that ethics "has to do with conduct." With the conduct "that is 'right' in the view of a given society and time period, with conduct that is 'good' out of a sense of duty or conviction rather than from fear of punishment." He says that through "common consent" various modes of "good" and "bad" behavior are determined, "even though in today's society there
may be wide individual differences as to the appropriate label for

a specific situation."[6]

While there is much valuable information concerning the ethical decision-making process, it overwhelmingly involves decisions of the macro type (e.g., Do you or don't you print the story? Do you or don't you take freebies? Do you or don't you print the name of a rape victim?). There has been little attempt to explore the number of interconnected micro decisions involved in the journalistic writing process, where the journalist makes a number of ethical decisions of the micro type (e.g., Do I quote the anonymous source? Is this quote too gruesome to print? If I call this incident "an accident" does it infer the arrested is innocent?) that result in the choice of one word over another, one quote over another, etc. One micro decision drives another, ties to another. They are all connected; and it's this process that results in the journalistic account of an incident.

There is relatively little prior research concerning the cognitive processes involved in journalistic writing. One strain has utilized the protocol, pausal and pausal interview methods of study. Protocol analysis, as utilized by Schumacher et al. for example, involves a subject performing a task (writing a news story) while saying everything that comes to mind. With this think-aloud technique the subject is instructed to say anything he reads, writes or thinks while performing the task of writing a news story.

In the pausal and pausal interview techniques employed by Schumacher et al., a subject was seated in front of a writing platform consisting of an electric typewriter with a sheet of semi-silvered glass placed about six inches above the keyboard. (Due to appropriate lighting, this glass appeared transparent.) A video camera recorded a reflection of the writer's face, along with the copy being typed. For reviewing purposes, the camera was equipped with a set of timers, an audiotape recorder and a set of manually controlled switches that helped record a writer's pauses.[7]

After completion of a news writing task, the tape was played back for subjects as they were asked to recall what they had been thinking about during each pause of 5 seconds or more (i.e. periods during which no text was being produced) that had been recorded by the apparatus. In the pausal technique they were handed a list of "Pausal Categories" from which they were to choose their reason for each noted pause. In the pausal interview technique they were not given the list, but asked to explain everything that came to mind about why they paused. Researchers later identified these responses with the appropriate category from the listing.

While these methods provided some valuable results they are inherently limited; each interferes to some degree with the task being performed. With protocol analysis, it has been noted that talking while writing may seriously distort the writing process; the obtrusiveness of the pausal and pausal interview apparatus is obvious. Much of these limitations have been remedied by a new DOS-based computer program, "Gizzmo" (as creators Byron Scott, Phillip Brooks and Lee Jolliffe call it), that runs transparently behind a word processing program and unobtrusively captures each of the writer's keystrokes.[8]

The present research employs this "Gizzmo" key-capture technique to study the cognitive process of decision-making during writing. More specifically, it is an attempt to explore whether "Gizzmo" key-capture combined with the pausal technique is a sensitive method for analyzing the individual journalistic ethical decision-making process at the micro level---word by word---when students were exposed to the following questionable journalistic content: 1) extremely gruesome accident details; 2) information provided by anonymous sources and 3) hearsay information. A secondary purpose is to explore how differing levels of journalistic expertise influence the ethical decision-making process.

METHOD

Subjects

Eight journalism students served as subjects. Four of the subjects (two male, two female) were enrolled in a beginning journalism course, one of two journalism writing courses that serve as prerequisites for journalism school admission. Most had already taken the other pre-journalism course, which includes some media ethics instruction. The other four subjects (three males, one female) were enrolled in the school's most advanced news reporting course. It is the second news reporting course that is actually taught in the newsroom, where the students have a "beat" and are regular staff writers for the journalism school's city-wide daily newspaper.

Materials

Students were given a "Police Accident Report" fact sheet describing a purposefully exaggerated, grotesque accident scenario in which a pregnant woman was hit by a car that was driven by her husband (See Appendix A). The fact sheet contained a simulated situation that allowed for a number of potential ethical decisions to be made. Grotesque personal information about the accident victim was provided by anonymous sources. An identified source offered testimony that conflicted with the anonymous sources who implied the accident may have been self-inflicted. Hearsay damaging to the accused was included, along with extremely graphic and gory accident details. Using a fact sheet to write a news story is common in journalism schools, the students were therefore familiar with this approach. While this allows for little generalizability, it was necessary to assure that the writers were working with identical information.

Apparatus

The subjects typed their news stories on Atex Writer, the same computer word-processing program they use in their journalism writing courses and in the newsroom. The Gizzmo key-capture program had been installed prior to their arrival, and it was silently and unobtrusively "capturing" every keystroke they made, as well as the time sequence involved with each stroke (MIN/SEC/tenths). ASCII, scan and shift codes also are recorded by Gizzmo for later analysis. When the writing task was completed, Gizzmo "played back" all keystrokes, allowing the writer to "see" the writing session in either accelerated- or typed-speed or user-controlled step-by-step pace.

Procedure

Subjects came individually to the testing room and were handed the "Police Accident Report." They were asked to quickly read it through and told there was no other available information. They were then given 30 minutes to write a news story for publication in that day's edition of their city newspaper. At the end of the 30 minutes, students were shown how their story had been "captured" as they were writing it. They were asked to recall anything that had been going through their mind as they were writing, but told that we were particularly interested in the instances that they had paused for five seconds or more as indicated by the program timer.

Subjects were handed a "Pausal Category Listing" (See Appendix B) and asked if their responses fit the categories to use them, but that they could also free associate in their own words as well. This is the pausal category listing that Schumacher et al. used, but an additional category, "Effect on news characters" "Imagining how the news subjects might react. (Am I causing any harm to the news characters involved in the story? Does this harm outweigh any good that might result?" was added for this study's purpose of studying the ethical decision-making process. The original listing (Schumacher's) included the category, "Effect on reader" "Imagining how the reader might react, especially in terms of accepting or believing my message. (Will my reader believe this? Will this information have the effect I want?," which also pertained to the study's intended goal. Going through their story at the speed in which they typed it, the subjects were continually reminded that we wanted anything that they could remember they were thinking while they were writing.

RESULTS

Qualitative analyses were conducted on the written work, not just the final story, but more importantly, every keystroke made during the 30-minute time limit in hopes of examining the ethical decision-making processes involved. Special attention was therefore given to the questionable journalistic content that was expected to have elicited some ethical decision-making responses: 1) extremely gruesome accident details; 2) the use of anonymous sources and 3) the use of hearsay information. It is hoped that this study's results will provide researchers with new methodology for studying the ethical decision-making process involved in journalistic writing.

Accident Details

Pre-journalism Students

The beginning journalism students were more concerned with the mechanics of their writing and less concerned with the quality of the content. They thought it was necessary to include most of the information from the "Police Report" fact sheet in their story, regardless of its nature. In reviewing the key-capture playback, several even admitted that they used very little of their own wording throughout the story, that most of their story was straight from the fact sheet (in essence, plagarism). Conveying the sensation of this story to the reader was uppermost in their minds. During the review when they were prompted for the reasons for each pause of five seconds or more, they were most inclined to respond with the "Effect on reader" and "Mood" categories because they said they were pausing to determine the best way to catch the reader's attention.

For example, Subject No. 3 said that he was thinking of the "fetus...of the baby, of her being pregnant, of how explicit the accident was, and that's what I worked into the lead, because I knew that people would catch that,...[it] would grab their attention." He said that he was trying to illustrate the "graphicness" of the event in his lead. His next two paragraphs contained the basic who, what, where and when, and the fourth included almost in its entirety, the extremely questionable content contained in an anonymous quote.

The subject said that while he was reworking his lead, many of his pauses fell into the "Mood" category. He said he wanted people to read the lead and think: "Wow, it was her husband! I wonder if it was done on purpose? by accident? if he was drunk?" He said that he paused looking for a "better effect on the reader" by working some of the quotes in the lead so it would be more "eye-catching" than "just a hit-and-run." "I hate to say 'eye-catching' because it's a terrible way to have to think about it. But I wanted to catch the reader's attention, and I thought that starting off with such a graphic quote would do it." The "Illustrations" category also was appropriate for many of his pauses here, he said, since he was continually thinking about adding quotes in the lead that would make the story more "shocking."

Another subject (No. 4) said that he was trying to convey the "drama" of the story with his writing style. This story was so dramatic, he said, that he thought it needed a wide variety of sentence lengths. He said that after reading the fact sheet, his first pause fit the "Mood" category. That it was important to present what happened first, then "grab the reader next with the fact that this was her husband who had hit her." He said that the first time he read the quotes he thought they were "awful blunt" but then decided they weren't all that "terrible."

"It's just such a strong story. I think you'd have to leave [them] in." He said when he first read the quote, "Oh God, that baby just popped right out...," he thought it was "disturbing," but then after he started writing, decided that it and all the others would be included in his story. "I realized the story itself was gross, and I couldn't leave them out...without damaging the story." He continually paused, wondering whether they were "appropriate," he said.

This subject didn't have time to finish the story in the allotted 30 minutes, but said that he had come to the conclusion to use all of the quotes, regardless of the content. He justified this because these "were witnesses to the pregnant woman being struck in the stomach," that their responses were important to convey what had happened. "If you soft-ball it and leave all that out,...you're not accurately saying what happened, you're just trying to sugar-coat it."

Subject No. 1 said she thought parts of the quotes were too graphic, therefore she didn't want to include all of them, "just enough to capture the horror of the incident." Several indicated pauses were because she was at first going to put in all of the quote about the fetus looking like a doll, but decided to include only the first part about the fetus "laying on the side of the road." She said she was concerned with "Effect on reader" here, and that if she put in all of the quote, it might seem like she was trying to "sensationalize."

She said that after she had written her story, she paused for "Reviewing the content," because she wanted to make sure she had conveyed the shock of the situation. "I was shocked and I wanted to convey the horror...of the accident." Not necessarily to help the reader learn anything from it, she said. The shock value was not to teach them the consequences of driving drunk, for example, since this wasn't the case (husband passed breathalizer test at police station), but rather, that the shock was necessary to "set the scene," to "convey the feelings of the witnesses," she explained.

Several of one subject's pauses, she said, were to determine where best to add the fact that the husband was taken to the hospital and treated for trauma, so as to provide the most emphasis. She said she thought it "odd" that someone who tried to run over his wife---"obviously it's not an accident"---would need to be treated for trauma. This verbal analysis, which the Gizzmo key-capture technique prompted, caused the subject to seriously question her own objectivity: "I just naturally assumed he meant to do it....I don't know why, though."

Advanced Journalism Students

The review of the advanced students' key-capture playbacks revealed that they recognized the importance of not including the graphic details in their news stories, but the "Effect on reader" and "Effect on news characters" categories were rarely cited for their pausal reasons concerning the graphic details. Only one subject cited the ethics-related categories in the manner that was intended. When the others cited these categories, it was always for some other reason, such as wondering if the reader would believe the story.

They made more tasteful decisions than the beginning students, but didn't verbalize these as being ethical matters. The "Mood" and "Reviewing content" categories were most commonly noted, along with responses that such graphic content was "inappropriate" for publication or that readers didn't need to know everything in the police report. The graduate student (Subject No. 8) was the only advanced student whose play-back revealed he did include most of the graphic details.

Subject No. 5 said that these details weren't necessary to convey the meaning of the story. He said that there was much more to this story than just "what" happened, that the "why" concerned him the most here. "The story is not that a dead baby is scattered on the road. the story is that a) they're married and b) that no one knows what caused it." He said he paused for the "Effect on reader" category here, to consider if the story might be more believable if the gory details were included. But he said he decided that readers would believe this because it is so "unbelievable."

Several of Subject No. 6's noted pauses were because he kept debated with the "fetus was separated from her body" wording, and key-capture indicated he finally decided on "pregnancy was terminated," because it was not necessary to be "gory" and that this information is "none of the reader's business." He identified this pausal consideration only with the "Word choice" category.

Word choice pertaining to the fetus was indeed important to several of these students. For example, Subject No. 7's playback indicated that considerable time was spent trying to decide whether to write that a "baby" or a "fetus" had died. She said she didn't want to "offend" the reader with her choice here, since these words (baby, fetus) can be very "loaded words that people attach a lot of meaning to....I didn't want to be making some political statement in the article." She said she decided on "fetus" because it was in the fact sheet. "I didn't think I could say [baby] because it wasn't born yet....I was having a problem with that."

Her playback also indicated that she gave a lot of thought to the "suffered premature delivery" sentence in the report." She said that she was concerned with word choice so as to be technically correct, but also so it wouldn't be "offensive," to not only people who knew the victim but to any woman reading the story. She said she didn't know if "suffered" was the correct word to use for this situation, she said she thought it also might be offensive to other women.

Even though Subject No. 8 included more graphic details than the others, his play-back indicated that he struggled considerably with the tastefulness of the quotes. He said he "wanted to be as unsensational as possible, while at the same time accurately describing a sensational story." But he said he liked the quote about the fetus looking like a doll and wanted to make sure he included it. However, he said he did struggle with the "fetus" wording as well, especially the information about a second count of manslaughter being considered for the death of the fetus. "If you can have manslaughter of an unborn child, then that would have very serious implications...regarding the abortion issue."

Anonymous Sources

Pre-journalism Students

The beginning students' play-backs indicated overwhelmingly that were not very concerned with using quotes from anonymous sources. While some of them did consider the appropriateness of it, they all used most of the information. They gave very little consideration to the conflicting viewpoints of the identified and anonymous sources. (The one source willing to be identified implied the husband was at fault, while the anonymous sources implied the accident was self-inflicted by the wife.) These students' playbacks again indicated that it was more important to include all information they had, regardless of the source.

Subject No. 1 said that she really didn't like to use unidentified quotes, but thought that since "they said about the same thing" as the identified one, that she would use them. She thought that using all the quotes added an element of "curiosity" for the reader, "something for follow-up stories." Subject No. 3 said he thought the unidentified quotes were necessary to show that the wife may have done this on purpose, "because that's what I thought when I saw it." He said that since the husband passed the breathalizer test that he probably wasn't guilty of murder. He used all the quotes to convey the different possibilities of fault, he said.

Advanced Students

The more advanced students' playbacks indicated that they gave a great deal of consideration to the use of unidentified sources, but all of them decided to use them anyway. For example, Subject No. 5 said that prior to writing, several of his pauses were because he was thinking about some of the sources being anonymous. "I backed off" and "nixed them immediately." But his playback and subsequent explanation quickly revealed that he changed his mind and decided, he said, that according to two (anonymous) out of three witnesses, the wife "had jumped on the car of her own accord" instead of this being just a straightforward hit-and-run like he had at first assumed. ("Reviewing the content" and "Evaluation" were the only pausal categories he cited were.)

He said that he struggled back and forth with the anonymity issue. His "Key-Capture" playback revealed that at first he left these sources out, but that he changed his mind and did go back and include them in his story. He justified this with the argument that if he were in their place, he might not want to give his name either. He said he wasn't completely satisfied with his final decision, but decided the preponderance of the evidence (all anonymous) implied the wife was at fault. He likened this to hearing a rumor, "if you hear it once you don't believe it, if you hear it three or four times it is starting to get more and more believable."

Subject No. 6's playback indicated that he didn't want to include any quotes in his story, because he said that "witnesses always see things differently from everybody else." But he did end up including one, the most "generic" one he could find, one (anonymous) that just merely said the wife had been struck by the car, since this was indisputable, he said. But not that she was "hit in the stomach," since this may have just been what the witness thought she or he saw, the subject said. No pausal categories were really appropriate here, he said, except maybe

"Reviewing the content" so that he "wouldn't libel."

Subject No. 8's playback indicated he thought it was important to include enough information to convey the different possibilities of what may have happened, including the anonymous material. He said using anonymous sources here didn't bother him, because it was an accident, not something like a "political campaign."

Hearsay Information

Pre-journalism Students

All of the beginning journalism students' playbacks showed they included the hearsay information about the couple arguing the night before the accident (the accident report said: "Anonymous neighbor of the Harrison's said the couple seemed happy most of the time but had been fighting the previous night"). Subject No. 3, for example, paused to considered this, and said she decided that this information was important to the story because it gives the reader an idea of "how severe the fighting was." It would make the reader wonder if the accident was a result of the fighting, if the fighting had been "that dramatic or severe that one would want to kill the other." Another (Subject No. 1) said that several pauses resulted in the conclusion that this information conveyed that "something must have been wrong between the two of them." Subject No. 2 paused here, emphatically deciding that this was important because it explained an "argument they had had the night before" the accident. The only pausal categories that the beginning students noted with this information, however, were "Mood" and

"Reviewing the content" categories.

Advanced Students

The advanced students' playbacks showed that they gave the use of hearsay information little thought, and only one student (Subject No. 8, the graduate student again) included this information in his story. Subject No. 5 admitted while reviewing a pause pertaining to this information, that the more important issue here was why it happened not just that it did happen, he thought this information should come from the accused not from an anonymous source who said he/she had overheard some argument. He said that his story was going to be very brief and "will undoubtedly be followed-up once you can get [the husband] on the phone, because without getting him willing to talk to you, it's not fair to damn the man." Nevertheless, he didn't tie this to an ethics-related pausal category, instead citing only the "Word choice" and "Planning to do" categories as pertaining to his considerations here.

His review indicated also that he worried throughout the story about how accurate the facts were. His pauses were continually to ask himself: "Do I really know this?" since all the facts came mostly from witnesses, he said. Gizzmo key-capture indicated this contemplation, by showing cursor movement from one witness statement to the next, with significant pauses in between. But even with all these pauses, he said that only the "Support" category was appropriate, since he said he was continually thinking about what support there was for the assertions. He said that he didn't think he had enough valid facts for the story, not enough to be fair and accurate.

DISCUSSION AND CONCLUSIONS

In this attempt to explore the use of Gizzmo "key-capture" combined with pausal methodology to examine the individual ethical decision-making process, two levels of students---pre-journalism students enrolled in a beginning journalism writing course and students enrolled in an advanced news reporting course---were presented with a purposefully exaggerated, hypothetical "Police Report" fact sheet and asked to write a news story. The information allowed for a number of interconnected micro ethical decisions: Should anonymous sources be quoted? Should the grotesque accident information be included? Should damaging hearsay information be used?

The key-capture playbacks showed that the beginning journalism students were less likely to engage in thinking processes on this level. They overwhelmingly chose to include almost all of the grotesque accident information, anonymous sources' material and hearsay information that was included in the "Police Accident Report" fact sheet. While the advanced students' play-backs showed that their stories contained less grotesque information, and very little hearsay, they almost never cited the ethics-related categories of "Effect on reader" and "Effect on news characters." They struggled more with the use of unnamed sources than did the beginning students, but nevertheless, overwhelmingly included them. Play-backs and discussions indicated that most thought about this throughout their entire newswriting task. But interestingly, they all decided to go with this unattributed information, which they justified in several different ways.

When the "Effect on reader" or "Effect on news characters" categories were cited for pausal reasons---by both the beginning and advanced students, it was almost always for different reasons than were expected. For example, one subject said it was because he was searching for the "best effect," how to make the story more "believable." Matters involving "taste" and "appropriateness" often involved the "Word choice" and "Reviewing the content" categories.

Yes, the qualitative results of this study certainly are disturbing. While the advanced students recognized the questionable simulated conditions as matters of "taste" and "appropriateness," their not seeing them as possibly harming the reader or the news characters was alarming. These are students that should have had formal ethics instruction. They seemed naive about the fact that their words may have power that goes beyond the mere written page. Pausal categories may need to be worded differently in future studies along this line. The students may have needed more prompting in order to elicit the kinds of responses that were hoped for here. The two categories that it was thought would cover these bases---"Effect on reader" and "Effect on news characters"---may not have been adequate. What they saw as merely matters of "Word choice" or "Reviewing the content" could have actually gone deeper.

Midway through these experiments, it was suggested to us that the "Effect on news characters" category might be better if labeled: "Effect on story subject or subject's family" "Imagining how the story subject or his family might react, especially in terms of suffering." Talking about "causing harm" tends to elicit the response from journalists that they are not morally responsible for---or the cause of---any subject's pain. But that they could consider a subject suffering because of their story "regardless of moral causality."[9]

The beginning journalism students' results were most alarming! They didn't display even a semblance of good taste. Most of these students had been at least exposed to "journalism ethics" in another pre-journalism course they had taken. Granted it wasn't an in-depth ethics course, and they might not yet have been taught in their current newswriting course that it is questionable to use hearsay information or information from unidentified sources, but what about basic human compassion or good taste that one would hope is inherent in these people who someday may yield great power? In their quest to write the "eye-catching" or "shocking" story they neglected their responsibilities as journalists. Let's just hope that media ethics can be learned!

Aside from the disturbing qualitative findings, the Gizzmo "key-capture" and pausal techniques proved most useful for delving into the thought processes involved in decision-making. During the playback portion of the experiment, subjects seemed to vividly remember much of what they had been thinking about while writing.

Seeing their 30-minute writing episode played back for them, keystroke by keystroke prompted much discussion that might not have been possible otherwise. This methodology allowed for the examination of the interconnected micro decisions that are involved in the journalistic writing process.

Future studies utilizing this methodology might include an ethics course treatment, conducting writing tests both before and after the course. It would also be useful to conduct these ethical decision-making experiments in a panel study manner, testing a class of pre-journalism students, following through with testings at different stages in their j-education and then on into their various journalistic careers. Since this unobtrusive methodology can be used in an entire classroom or newsroom the research possibilities here are virtually limitless.

Appendix A

ACCIDENT REPORT
City of Columbia Police Department

SUBJECT: Hit and run accident
DATE: Thursday, Feb. 14
TIME: 6:07 pm
PLACE: W. Worley St., 400 block

DECEASED: Linda Harrison; white female; 8 1/2 months pregnant; an attorney; resided at 89 Banks Ave., Columbia; was attempting to cross the street when struck by vehicle; taken to Boone County Hospital Center; died one hour later of internal injuries and bleeding; survived by parents George and Betty Greenwood of Jefferson City, husband John; two sisters, both of St. Louis.

Premature delivery occurred upon impact. Fetus dead at scene.

DRIVER: John Harrison; 32; white male; a private-practice psychologist; husband of the deceased; resides at 89 Banks Ave., Columbia; was driving a black 1990 Ford Probe registered to Linda Harrison; passed breathalizer test.

WITNESSES: Three, two of whom are anonymous. One unidentified said, "She was crying hysterically and just ran in front of the car....It hit her smack in the stomach....Oh God, that baby just popped right out....She went one way and the baby another. Oh God!" The other unidentified said, "She just stepped right out in front of that car. It's like she was watching for it and did it on purpose!" The third witness, Mary Beth Welch, said she saw a dark-colored sedan strike the deceased as she attempted to cross the street, then head east toward Providence Rd. "It was awful! The car just slammed into her---she rolled over the hood...blood was everywhere. The fetus was laying on the side of the road! I went to pick it up...I thought it was a doll...it was just awful. He just kept on going like nothing had happened."

FOUND AT THE SCENE: Radio antenna, side view mirror, chip of black paint.

ARREST: Harrison arrested Feb. 14 after he surrendered to police one hour following accident. He was charged with one felony count of vehicular manslaughter (second felony count for fetus is being considered), posted $30,000 and was released on his own recognizance. Preliminary hearing is in one month in Boone County courthouse; conviction could result in 15 years in prison and/or $10,000 fine.

MISC.: George Greenwood: "I can't believe this. I know he's sorry for what he's done, but my little girl and new grandbaby are dead and he can't bring them back. They ought to keep people like that off the road." Anonymous neighbor of the Harrison's said the couple seemed happy most of the time but had been fighting the previous night (Feb. 13).

Harrison taken to the University Hospital emergency room Feb. 14; treated for trauma and released. Declined to comment.

Appendix B

Description of Pausal and Pausal Interview Categories

Reviewing the assignment	Going back over the assigned materials. (Is this what I should be including in my writing? Is this what I should be writing about?)
Reviewing own experience	Thinking back on how I felt or what I did in situations like those I am writing about.(What do I know about this topic? What was my feeling at a time like this?)
Reviewing the content	Thinking back on whether everything has been covered.(What have I said so far? Do I have everything down that is most important?)
Support	Thinking of arguments for a point, or supporting statements (How can I justify what I have said? How can I make this point sound reasonable?)
Illustrations	Providing examples, analogies, or stories. (Can I help the reader to picture this? Does my example fit my topic?)
Effect on reader	Imagining how the reader might react, especially in terms of accepting or believing my message. (Will my reader believe this? Will this information have the effect I want?)
Effect on news characters	Imagining how the news subjects might react. (Am I causing any harm to the news characters involved in the story? Does this harm outweigh any good that might result?)
Mood	Expressing a feeling that is appropriate. (What atmosphere do I want to create? What emotion do I want to express?)
Sound	Testing for smooth flow by reading back to oneself. (Do things flow, or do they sound jumpy? Could I make things sound better?)
Evaluation	Judging whether I am satisfied with a part of the writing.(Did I say what I really wanted to say? Is this a (good,bad) paper?)
Standards	Deciding whether my writing is set up the way it should be.(Does this follow the expected style? Does this meet existing standards?)
Planning to do	Considering whether the correct steps are being taken in reaching a goal. (What should I do next? Does this help reach the goal for this paper?)
Global Planning	Long-range planning of what to say, reaching over most of all of the piece of writing. (How can I organize the entire piece of writing? What is my angle or approach?)
Planning to say	Short range planning of what to say,from choosing the next word to planning how to present the next idea.(How can I finish this sentence?How can I express the next idea I have in mind?)
Reorganizing	Changing the order of presentation of points. (Would it help to use a different order? Would it help to say something else first?)
Transitions	Bridges in wording, from simple connective like "and" or "or" to short sentences. (How can I tie my points together? How can I show that these points are related?)
Word choice	Considering if a word has the desired meaning. (Does that mean what I want to say? Is there a better word here?)
Sentence Structure	Building a proper sentence. (Is this a grammatical sentence? Have I left something out of my sentence?)
Spelling	Deciding how to spell a word. (Did I spell that correctly? Does that look right?)
Punctuation and capitalization	Inserting the proper punctuation marks and capitals. (Do I need to capitalize this term? Have I missed a punctuation mark?)

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"COLORIZING" HDTV: IS CONSUMER ADOPTION OF COLOR TELEVISION AN APPROPRIATE COMPARISON FOR ACCEPTANCE OF HIGH-DEFINITION TELEVISION?

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Association for Education Journalism and Mass Communication
1993 Convention,
Kansas City, Missouri

"COLORIZING" HDTV: IS CONSUMER ADOPTION OF COLOR TELEVISION AN APPROPRIATE COMPARISON FOR ACCEPTANCE OF HIGH-DEFINITION TELEVISION?

In the last decade, high-definition television (HDTV) has been one of the most discussed emerging consumer technologies. The transition from the current television transmission standard (known as NTSC)[1] to HDTV has been heralded as a revolutionary improvement in television viewing unmatched since the development of color television in the 1950s. Similar optimistic projections were heard in the congressional debates about color television. For example, during United States Senate and House of Representatives committee hearings on the topic[2] there were many predictions of high consumer acceptance. The cost of television receivers would drop dramatically once in mass production, it was said, and consumers gladly would pay more for better picture quality. The public should not be denied the opportunity to have a better quality television image, it was argued. The expeditious development of color television for home use was in the public interest. Substitute "high-definition" for "color" in these statements and they become the contemporary optimistic projections for the success of HDTV, even though consumers will have to replace each of their current television sets with new receivers in order to watch programs in high-definition.

While viewers still could receive broadcast signals with their black-and-white receivers, new sets were required to watch color transmissions in color. Does this similarity between color television and HDTV -- that for each a consumer needs to purchase new equipment -- make consumer acceptance of color television an accurate analogy for the future of HDTV? Today, 90 percent of television sets in United States homes are color receivers.[3] If the color television/HDTV analogy is correct, then, there will be an enormous American market for HDTV. The analogy also may be appropriate for another reason: Color television claimed to substantially improve the picture quality of the system it replaced, and HDTV makes the same claim.

This paper will analyze the appropriateness of using the adoption of color television as both a predictive tool of consumer market penetration of HDTV and as a valid aesthetic comparison which, if accurate, may stimulate consumer purchases of HDTV receivers similar to the way consumers made the transition to color television sets. This paper will examine two factors pertinent to the comparison of color television and HDTV. First, color television and HDTV standard-setting processes are summarized and comparisons made between the two. Second, color television's success, arguably based on its aesthetic improvement over black and white television, is compared with the posited audio and video superiority of HDTV over NTSC to determine if this factor may lead to consumer acceptance of HDTV.

A. Comparisons between the Adoption of Color Television and HDTV Standards

1. The Development of a Color Television Standard

The development and selection of a color television standard was not a smooth policy process. Instead, it was lengthy (taking more than a decade), heavily politicized and filled with poorly supported, overly-optimistic rhetoric about immediate, wide-spread consumer acceptance.

Color technology emerged during the policy debates over a standard for black and white television. On January 27, 1941, the Federal Communications Commission (FCC) received a report from the NTSC analyzing five American color television systems.[4] A month later, the FCC adopted the current black and white standard and, at the same time, recommended further testing of color systems. Color capabilities were still rudimentary and systems required at least twice as much bandwidth as did the newly accepted NTSC standard for monochrome broadcast. Further innovations in color television transmission (including narrowing the bandwidth) were delayed by World War II. In 1942, the manufacturing of all television sets was discontinued for four years. At that time only 3,000 sets were in public hands.[5] In 1944 and 1945, the FCC resumed its television activities and assigned VHF channels for black and white broadcasts and a portion of the UHF band for experimental television broadcasts in both black and white and color.

In 1947, the Columbia Broadcasting System (CBS) petitioned the FCC to establish commercial color television standards, preferably those proposed by CBS.[6] The FCC concluded that the standard CBS requested was inappropriate because it needed a bandwidth of 14.5 megahertz. Before sufficient technical progress was made on the CBS color standard, the FCC, on September 30, 1948, stopped issuing new television station licenses.[7] During 1948, the television manufacturing industry had produced 975,000 receivers, bringing the total number of sets in use to approximately 1.16 million.[8] In one year the television audience had increased 4,000 percent.[9] In another decade there would be as many sets in use as families in the United States.[10]

During 1949 and early 1950, extensive congressional hearings were held on color television. Three standards were under consideration, i.e., those proposed by Color Television, Inc. (CTI), CBS, and the Radio Corporation of America (RCA). According to analyses done by the Advisory Committee on Color Television,[11] at the behest of Senator Ed Johnson (R-Colo.), Chairman of the Senate Committee on Interstate and Foreign Commerce, the CBS field sequential system offered superior color fidelity but had problems with flicker and, most crucially, was incompatible with the existing black and white standard.[12] The CTI system was compatible with the existing standard, but had flicker problems and made poor use of the channel width.[13] The RCA system used channel width most efficiently and was compatible with the existing standard, but had the poorest color fidelity.[14] While these hearings were in progress, the number of black and white receivers produced in the United States had reached 4.16 million.[15]

On October 11, 1950, the FCC, with more than 10.5 million black and white sets in use in the United States, accepted the incompatible color standard proposed by CBS.[16] Under this standard, consumers would have to purchase and install television adapters to receive color broadcasts in black and white. To receive the signal in color, even more equipment was required. However, several events occurred that prevented widespread adoption of the CBS standard. RCA challenged the decision and effectively stalled the process until the Supreme Court upheld the FCC decision and struck down a temporary restraining order.[17] On June 25, 1951, the FCC announced that all regular stations could broadcast color programs in accordance with the CBS standards.[18] Within five months, on Nov. 20, 1951, the federal National Production Authority (NPA) prohibited the production of color television sets for home use.[19] The NPA argued that such an industry would divert strategic material, personnel and manufacturing facilities from the Korean War effort. Seven months later the order was modified to permit limited production with NPA permission. Finally, in March 1953 NPA abolished the order. Confounding this 18-month delay was the fact that total monochrome receivers produced in the United States by the end of 1952 had reached 23 million, of which an estimated 21.2 million were in use.[20] The dilemma facing the broadcasting and manufacturing industries is well framed by the 1953 comments of Jack Gould, New York Times television columnist:

> The fatal drawback to the CBS system is that it is virtually impossible to introduce because it is incompatible with present TV. When CBS puts on a color program, the owner of a black and white set sees just a lot of jibbly lines. To make a picture in black and white, the set owner must buy an adapter. Not many people will want to spend money just to obtain in a different way what they have now. The problem is even more elemental on the programming end. Who is going to spend the money to put on a color show, if it means the loss of virtually all of the existing audience?[21]

Whether it was because of the succession of delays or the poor choice of a standard, as of 1953 no sets had been manufactured to the CBS specifications and no public broadcasting had occurred under the CBS standard. The lack of progress prompted the House of Representatives to hold hearings on the status of color television. Dr. Elmer W. Engstrom, vice president in charge of RCA Laboratories Division and instrumental in developing the RCA standard, testified that RCA correctly predicted the failure of the field sequential standard.

> At that time RCA took the position that this incompatible system would never be successful because, with it, there would be a minimum amount of color broadcasting available and there would never be a public demand for the type of color television sets which the proponents of the incompatible system had demonstrated before the FCC and that is exactly what has happened.[22]

Meanwhile, the NTSC had adopted the RCA compatible standard and recommended its acceptance by the FCC. On December 17, 1953, the FCC gave its approval.[23] Even then color television sets did not sell rapidly. Three years later, only one percent of the United States television households had color sets.[24] An RCA 15-inch color set sold for $1,000 in 1954. Set sales did not start to rise until 1964.[25] Not all television broadcasting was in color, and the number of color transmissions even declined from 1953 to 1964. Only NBC maintained an extensive schedule of color broadcasts.[26] Color set sales finally increased significantly after 1966 when NBC began to broadcast its full schedule in color.[27] Consumer acceptance of color television grew rapidly in the late-1960s through the mid-1970s.[28]

2. The Status of FCC Policy on HDTV Standards

"High-definition" refers to technological improvements increasing the resolution of televised images. All proposed HDTV systems use a wide-screen format with a movie-like 16:9 aspect ratio (the ratio of screen width to screen height), compared with the present 4:3 world-wide television standard. The wide-screen format would eliminate the need to crop the sides of movie images or use a "letterbox" format when films, either broadcast, videotape or laser disk, are displayed on television sets. The current NTSC transmission standard provides a nominal 525 scanning lines for each televised image transmitted at a rate of 60 fields per second, equivalent to 30 frames per second. Some of the HDTV transmission systems proposed for the United States or in operation in Europe or Japan approximately double the present resolutions and add high-quality, multichannel digital sound. The common frame of reference is that an HDTV image has the clarity and detail of a 35mm movie image.

The United States entered the race to set HDTV standards later than either Japan or Europe, but like them started by considering incremental improvements to the existing analog television system. For example, RCA's Sarnoff labs spent $40 million between the late- 1970s and mid-1987 on analog-based advanced television research. CBS and other smaller groups also undertook research and development work.[29] However, as computer software technologies, particularly data compression, improved in the late 1980s and early 1990s, it became apparent that a digital system offered both superior performance and opportunities for integration with computers not available with analog systems. That insight helped the United States leapfrog Japan and Europe and secure the lead in the international race to develop an HDTV standard for mass market receivers.

From 1989 through 1991, congressional committees held numerous hearings on HDTV and the government's role in promoting this new technology. That debate now has subsided and the focus has shifted to choosing an HDTV technology. The FCC appointed an advisory committee, the Advisory Committee on Advanced Television Service (ACATS), to test and recommend a technical standard for HDTV transmission in the United States.[30] Five consortia submitted systems for testing, four of which made all-digital proposals. In February 1993, the ACATS announced that none of the five systems it had tested was sufficiently advanced. The committee recommended that four of the five systems be improved and retested.[31] The FCC has set a mid- to late-1993 deadline for determination of the HDTV standard, and proposed a 15 year phase-out of the NTSC signal. To complete the transition, within five years of adoption of an HDTV standard broadcasters would need to apply for licenses and build facilities to simulcast HDTV and NTSC signals. At year 15, broadcasters would no longer be permitted to transmit NTSC signals and any NTSC television sets would be useless.[32] Under FCC decisions, broadcast television would be exclusively in high-definition, and no NTSC set would show a viewable broadcast picture.

3. Comparing the Development of Color Television and HDTV Standards

It took 12 years and a complete reversal of the initially adopted standard for color television to become a reality in the United States. Even when the standard selection process was completed in 1953, however, consumers did not rush to replace their black and white television sets.[33] To suggest that the slow penetration of color television was because of consumer apathy about the technology would be oversimplistic. There were numerous factors that contributed to the slow penetration of color television, many of them unique to the historical circumstances within which color television emerged. Some of the delays in implementing the CBS standard were the result of unforeseen circumstances beyond the control of the FCC. For instance, RCA's lawsuit tied up the CBS standard for almost a year. The NPA's order also was an unexpected restraint on the development of the consumer market. Once the NPA order was announced, all broadcasters, including CBS, voluntarily complied and stopped experimental color broadcasts, and all receiver production came to an abrupt halt. Arguably, the transition to a noncompatible color standard would have been easier if implemented immediately, since there were far fewer black and white receivers in public hands in 1950 compared with 1953.[34]

All these considerations may have prevented the success of the CBS standard, but they do not explain why, once the RCA standard was chosen, color receiver penetration remained painfully slow.[35] This almost stagnant development was in the face of dropping color set prices[36] and in the midst of the "golden age" of television.[37] According to Head and Sterling, during this time "networks put first priority on stimulating people to buy sets."[38] But after 20 years of having color television sets available, and almost 10 years of full-time color broadcasting, only 50 percent of the United States television households had purchased color sets. These conditions, if predictive of HDTV development, do not bode well for HDTV as a consumer product. The 20-year slow growth period for color television is significantly longer than the proposed 15-year phase-in period for HDTV proposed by ACATS. Even if the penetration of HDTV is similar to color television and, after 20 years is in place in 50 percent of United States households, the other half of American homes will find themselves without broadcast service if they don't then go buy a HDTV receiver.

In retrospect, compatibility appears to have been a requisite though not sufficient condition for the eventual success of color television in the consumer market. While there was an incompatible color standard (the CBS technology), the color television receiver industry was unsuccessful. Primarily, this failure was due to the increasingly well-established base of black and white televisions. Because HDTV transmissions will be incompatible with the existing television broadcasting standard, the color television experience may be instructive.

Color television receiver cost was another consideration in initial lack of consumer acceptance. CBS stated that color receivers would initially cost approximately $300.[39] Engstrom testified that color sets initially would cost 50 percent more than black and white sets, and then drop to 25 percent more.[40] However, color receivers first entered the market at $1000 in 1953 dollars,[41] and even then, manufacturers were losing money on each set sold.[42]

HDTV receivers are likely to cost approximately $3,700 dollars when first placed on the market.[43] (Sharp announced an $8,000 unit in early 1992, but costs certainly will decline with competition and economies of scale.[44]) Smaller HDTV receives will cost less than large-screen sets, but the smaller size makes it harder to detect the advantages of HDTV over the NTSC standard. According to Ed Horowitz, Viacom senior vice president, "If you're talking about going into a 25-inch or 30-inch television set . . . [y]ou can tell the difference, but it won't matter."[45]

It is possible that HDTV will make its initial headway among "technophiles," in particular those who are likely to buy big screen or projection televisions.[46] However, in "gadget-crazy Japan, consumers haven't rushed to tune in even though NHK has been beaming HDTV eight hours a day. TV makers had once expected to blanket Japanese

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homes by now. But only a few hundred 35-inch-plus sets have been sold . . . ."[47] Those who immediately purchase new electronics make up a only a small portion of the consumer market[48] and, while it may be a viable niche for HDTV, such a small consumer reception for the technology brings into question the impact on the all the other consumers who might not want to purchase an HDTV set, but will be forced to do so when the NTSC standard is phased out.

Optimistic projections of HDTV acceptance are based on models of rapid diffusion of new technologies.[49] According to forecasting models presented to the National Telecommunications and Information Agency, under a model of rapid diffusion, such as occurred with VCRs, new electronic products generally achieve one percent household penetration in 7-8 years.[50] Using such a model, HDTV would be in 25 percent of United States television households before the 15-year phase-in period is over, and 70-93 percent after 20 years.[51] However, under a more sluggish model of diffusion, exemplified by projection television, reaching a one percent penetration level (1 million sets) for HDTV receivers could take 15 years.[52] Under this model, in fact, markets may never materialize (for example, AM stereo, picturephones and videotex).[53] However, HDTV may be different in that, regardless of the natural rate of market diffusion, the market will be forced to exist due to FCC-mandated transition deadlines.

Currently, there is an established base of television sets in the United States valued at $80 million dollars,[54] and there is no direct evidence that consumers are willing to pay more for HDTV sets than for NTSC sets. Studies on consumer preference are limited and many that are done are proprietary. One 1992 study reporting on eight studies of the letterbox format[55] using NTSC signals concluded that "consumer reactions to widescreen images are highly favorable."[56] However, anothers found only limited support for wide-screen sets carrying NTSC programming.[57] In the latter, viewers tended not to like NTSC signals shown on an HDTV receiver. They reported that the image was cropped on the top and bottom, distorted to fit the new screen dimensions or presented with blacks strips on the left and right sides to maintain the NTSC aspect ratio. Until sufficient HDTV programming is available, these are the ways in which HDTV set owners will view television. Consumers did not switch to an incompatible color system. Even when a compatible system was available, they bought color sets very slowly and only after set prices fell considerably and networks programmed full-time in color.

A 1989 Congressional Budget Office report compared three "very optimistic" forecasts of the potential HDTV market.[58] Fulfillment of these forecasts will be assured if NTSC signals are replaced with HDTV transmissions within 15 years. Consumers will, in effect, be forced to invest in the technology to maintain access to broadcasting services. The total conversion of 150 million television sets to HDTV receivers may cost up to $525 billion.[59]

2. HDTV's Aesthetic Improvements: Will Consumer Acceptance Follow?

Jack Clifford, chairman of Colony Communications, a broadcast, cable and telecommunications company, contrasts the proposed shift to HDTV with the evolution from black and white television to color.

> The change from black and white to color was a more perceivable and more dramatic occasion than the change to HDTV will be, in spite of the euphoric announcements that are being made today. The average American will not recognize as deeply and effectively the change to a high resolution television system as he did the change to color--and yet it took 20 years before color became a business.[60]

Proponents of HDTV claim that it is so distinctly different from NTSC transmissions -- as color was markedly different from black and white -- that consumers cannot help but be impressed and, therefore, accept the financial cost of replacing current television sets with HDTV receivers. However, some who have seen HDTV are not so impressed: "While the resolution is certainly much better than NTSC resolution, we do not agree that it could be compared with 35 millimeter film,"[61] says film director Francis Ford

Coppola, who has experimented with high-definition video production. Coppola said the standards under consideration in the United States are "nothing but souped-up NTSC." He says HDTV needs about 2,000 lines to be equivalent to 35mm film. "Unfortunately, everyone's arguing not to make it better, but to make it worse. They're saying that it's not even necessary to make it be as good as it is, where as a filmmaker, I'm saying it's just on the edge of being good enough."[62]

Using 35mm film as a point of reference can be misleading in another respect: Film technology is constantly improving. Kodak testing has shown that an image on 35mm 5247 negative film is equivalent to a scanned image of 2,330 lines. NHK, the Japanese television company, also conducted tests showing that color transparency film was comparable to an image with 1,500 lines.[63] Both surpass the proposed HDTV resolution of 1125 lines.

Would an average television viewer be unimpressed by HDTV? Viewers respond to content, not technology. "I predict that a lousy motion picture presented in HDTV on HBO . . . will get no more viewing than a lousy movie in NTSC," Clifford says.[64] Or, as the maker of laser disks put it, "The same crap that is coming out of Hollywood is going to come out of these technologies, by and large."[65] And Richard E. Wiley, a former chair of the FCC and head of the commission's Advisory Committee on Advanced Television Service, acknowledged "the public's alleged lack of concern in having the absolute 'best' television picture available."[66]

In Europe it was feared viewers would not respond to the quality offered by HDTV.

> To the exasperation of many television engineers, viewers appear quite content to watch fuzzy pictures on tiny portable televisions with aerials made out of coathangers. And most viewers are prepared to ignore, or at least tolerate, the deterioration in picture quality when watching a programme which has been recorded at home on a VCR.[67]

Indeed, the importance of content over technology has a historical precedent with another broadcast consumer product. In the 1930s, when Frank Stanton was conducting research on radio audiences, he was surprised to find that most listeners were more concerned with programming than with signal strength or reception quality.[68] More recently, a market survey for Ferguson, which for a decade has been the biggest seller of large-screen televisions in Britain, found that 60 percent of buyers initially were attracted to a set by the appearance of a model's cabinet, 35 percent by the price and 23 percent by the picture quality.[69] This may indicate that buyers find the picture quality similar among sets, but it also may signify a general level of satisfaction with current picture quality.

Another reason consumers may not respond enthusiastically to HDTV is that the benefits of a sharper image are most noticeable only on a large screen. Researchers at the Massachusetts Institute of Technology's Media Laboratory found that at nine feet from the screen, a typical viewing distance, most viewers could not see a difference between a 28-inch HDTV set and a similarly sized conventional television. Screens of 35 inches or more are the key to HDTV's success, but projection television sets are too dim to be viewed comfortably in a brightly lit room.[70] Further, it has been estimated that projection television sets with 40-inch screens may weigh 150 pounds, protrude two feet from a wall and cost $3,000. A direct-view television would be heavier, bulkier and more expensive.[71] Two manufacturers recently announced 50- and 55-inch rear-projection NTSC sets selling for $4,999 and $4,495 respectively. And RCA has announced that in 1993 it will sell a sophisticated, 16:9, 34-inch direct-view television with 750 lines of resolution for $4,999.[72] Large, flat-panel displays that could be hung on the wall like a picture would overcome some of the disadvantages of projection or direct-view sets, but they are not likely to be ready before the turn of the century.[73] Even if HDTV is perceived as a significant visual improvement over NTSC (as color was vis-a-vis black-and-white television), the remaining criticisms of television programming and display problems likely will limit penetration of HDTV into American homes for a number of years.

Despite these potential problems, HDTV will offer viewers a different experience because it will present a different shape than current NTSC television. Except for the change in resolution, this will be the most obvious difference between the formats, and it alone will affect the viewing experience. The wide-screen format is so significant a change that, as noted, television set manufacturers are producing sets using the more horizontal image even before HDTV is implemented. The main reason for the early adoption of the wide-screen format is to accommodate videotapes and laser disks of movies that retain the dimensions of the original films so prized by film afficionados. This overcomes some of the problems inherent in cropping and panning, which are used to fit wide-screen movies on more nearly square television screens. With the wide-screen format, "You'll see more buffaloes in 'Dances With Wolves,'" as one video executive put it.[74]

Unfortunately, a 16:9 aspect ratio is not a panacea. For those who want to watch film classics from the 1940s, for example, the wider screen will not help and, in fact, will require black strips on the sides of the picture as letterboxing now does on the top and bottom of the picture. Nor will the new screen shape accommodate movies shot in more unusual formats, such as Cinerama, which has a 3:1 aspect ratio, Ultra-Panavision, which is 2.76:1, and CinemaScope, which is 2.35:1.[75] A Cinerama film shown on a 16:9 screen still will lose nearly half the image. So cropping or panning techniques will be needed even with a 16:9 format.

When the widescreen format is combined with larger screen sizes, viewers will feel more like they are in the scene they are watching. This, too, will change the viewing the experience. For most people watching NTSC sets, a comfortable viewing distance is about seven times the height of the screen. The higher resolutions of HDTV make for a comfortable viewing distance of about 3.3 times the height of the screen. The reason for this is that sitting any closer would reveal the scanning lines that make up the television image, and sitting farther away would hide some of the detail in the picture. Therefore, either viewers will sit closer to an HDTV set than to an NTSC set, or they will use a larger set (50 inches measured diagonally compared with 19 inches, for example). But the most significant feature of the wide-screen picture is that it involves a 30-degree angle of view compared with a 10-degree angle for the boxier NTSC image. This increased peripheral viewing and more life-size imaging is more involving for the viewer.[76] One drawback of the increased image width is that the eye's peripheral vision is more sensitive to flicker, which is inherent in film shot at 24 frames per second and video displaying 30 frames per second.

Another way in which viewers will become more involved is through theater-like, CD-quality sound. This important aspect of the viewing experience often is overlooked, but filmmakers and theater owners realize its importance. One proposed system for distributing motion pictures to theaters is via HDTV satellite transmissions. This would have the capability of including the four channels of audio (left, right, center and rear) that create the theatrical surround-sound effect.[77] High-quality, five-channel sound (left front, right front, center front and two rear channels) already is available to those who have the proper equipment. "Psychologically, the impact is astonishing. Reaching the viewer from all sides, multidirectional sound greatly intensifies the viewer's involvement in the film."[78] It is likely HDTV also will include five-channel audio.[79]

This greater viewer involvement has serious implications for the way people typically use television. Instead of being constant background noise, as it often is, while people talk, eat, sleep or do any number of routine household chores, the turned on television set may be more demanding of the viewer's attention. Lull has identified background noise as one of several structural uses of television.[80] In addition, by being more demanding of attention, HDTV may change the way television regulates behavior, another of Lull's structural uses of television. Instead of talking with family members or others during commercial breaks or during slow parts of a program, viewers may become absorbed in the large, high-definition images.

> The experience of watching a large projection screen is a special one. The additional detail and heightened sense of reality are so significant that some viewers find their minds drifting when viewing a traditional 25- or 27-inch screen.[81]

This might please advertisers, but, more important, it would have the entertainment function of television move to the fore, displacing some of the relational uses of the technology. These include communication facilitation, which, if disrupted, could alter the equilibrium of the social unit. Alternatively, and of possible concern to advertisers, some research has found that divided attention, as when television is in the background, may enhance message persuasiveness because viewers would not be able to argue internally against the message.[82] If HDTV does change the social relations of television viewing, and thus viewer attention, the value for advertisers remains to be seen.[83]

It is worth noting that regardless of whether HDTV will change the way people watch television, it already has changed the way television and films are produced. The importance of films to HDTV cannot be overestimated; because movies are shot in wide-screen on 35mm film with multichannel audio, they already are high-definition and will be a staple of early HDTV programming.[84] Indeed, since 1957, 85 percent of prime-time programming produced in the United States has been shot on 35mm film.[85] Moreover, some movies are being shot in part or entirely in HDTV or are using HDTV in some or all post-production work. This work has revealed some of the benefits and limitations of HDTV for the film industry. In other cases, television programs already are being shot with an eye toward later conversion to wide-screen HDTV format. For example, Shukovsky-English Entertainment is taking this route to protect its investment in "Love and War" for future syndication on the wide screen.[86]

The wide-screen, multi-speaker, theater-like viewing experience promised by HDTV may have aesthetic qualities so markedly different from watching current NTSC television that consumers will quickly accept it, as they did audio tapes and compact discs in place of vinyl records. On the other hand, the differences between HDTV and NTSC pictures on the smaller HDTV television sets that most consumers conceivably could afford may not be so noticeable that there will be widespread consumer demand for high-definition.

3. Summary

The development of the color television market in some ways is an appropriate analogy for HDTV.[87] Both involve a visual improvement over the former television images, and both require new consumer equipment. The example of color television, then, may offer insight into the complexities that HDTV could face in the consumer television market. But optimistic projections based on the successful end-result of color television miss the point of the difficult journey that was made. One particular condition of color television, essential to its success, was the eventual decision to require a compatible standard with existing black and white technology. Current proposals for HDTV technology do not overcome the barrier of incompatibility. If HDTV follows a path similar to the CBS color television standard -- that is, without compatibility -- it is likely to fail in the consumer market unless consumers are forced to purchase HDTV sets in order to watch any broadcast television at all.

HDTV, like color television, offers visual improvements over the NTSC standard. But, also like color television, its perceived value cannot be extracted from considerations of cost, the importance of addressing programming content, the difficulties of screen display and an unforeseen economic, social and technological future. Digital signal compression in cable television, for example, also will have an impact on HDTV as a viable consumer product. John Malone, president of Tele-Communications, Inc., the nation's largest cable system operator, has announced plans for 500 channels of television, delivered by video compression.[88] Bob Sitter, a Home Box Office executive, has said, "If customers are satisfied with digital compression, HDTV could become to the consumer electronics business what the Edsel was to the auto industry."[89] The introduction of color television did not have to contend with such technological innovations as video compression, which already may have made HDTV obsolete.[90]

But these criticisms of the assumptions underlying consumer acceptance of HDTV may not necessarily spell doom for the technology. It already is in use in the film and television industries as a production tool. It has applications to the military[91] and space[92] industries. It is integrally related to various technologies, such as digital signal processing, high performance displays, optical data storage and high resolution systems. Its importance in facilitating convergence among technologies suggests that HDTV has multiple applications in non-consumer markets.[93]

Color television was introduced as a component of a larger governmental policy regarding the direction of broadcasting in the United States. Analogously, HDTV increasingly is being considered in light of a national telecommunications policy. It may be argued that considering the growing importance of having separate telecommunications technologies interfacing with one another, there is a need for an all-digital HDTV system. That would shift the focus away from HDTV initially as a consumer product.[94] If the color television analogy is instructive, and consumer acceptance of HDTV will be limited for many years, its interfacing capabilities could give HDTV time to develop while waiting for consumers to catch up.

NOTES

[1] Established by the National Television System Committee and adopted by the Federal Communications Commission in 1941. *See* F. LESLIE SMITH, PERSPECTIVES ON RADIO AND TELEVISION 29 (3d ed. 1990).

[2] *See infra* text accompanying notes 11-15.

[3] Jack Clifford, *HDTV from a Business Perspective*, HD WORLD REVIEW, Spring 1991, at 5.

[4] Color Television: Hearings Before the Comm. on Interstate and Foreign Commerce, 83rd Cong., 1 (1953) (statement of Hon. Charles A. Wolverton, chair) [hereinafter "Wolverton hearings"].

[5] *Id.* at 2. According to Sidney Head, at the start of World War II 10,000 receivers had been sold to the public. SIDNEY W. HEAD, BROADCASTING IN AMERICA 162 (3d ed. 1976).

[6] Wolverton hearings, *supra* note 4, at 2.

[7] FCC Sixth Report and Order, 41 FCC 148.

[8] Wolverton hearings, *supra* note 4, at 3. Other sources gives estimates of 250,000 receivers. *See* SIDNEY W. HEAD, *supra* note 5, at 164.

[9] *Id.* at 162.

[10] *Id.*

[11] The Present State of Color Television: Report of the Advisory Comm. on Color Television to the Comm. on Interstate and Foreign Commerce, 81st Cong., (July 14, 1950).

[12] *Id.* at 30.

[13] *Id.* at 24.

[14] *Id.* at 35.

[15] Wolverton hearings, *supra* note 4, at 3.

[16] *Id.*

[17] *Id.* at 4.

[18] *Id.*

[19] *Id.*

[20] *Id.* Others give estimates of 15 million television sets. *See* SIDNEY W. HEAD, *supra* note 5, at 164.

[21] Jack Gould, *The Present Status of Color TV*, N. Y. TIMES, Mar. 15, 1953 at 13, col. 1.

[22] RCA engineers, in fact, experimented with the field sequential system from 1940-45. They determined the technology was not a technically or economically sound basis for a color television system and switched research efforts to an all-electronic simultaneous system (even though at the time it required a wider bandwidth). *See* Wolverton hearings, *supra* note 4, at 8 (testimony of Dr. Frank Stanton, president, CBS).

[23] Lynn A. Yeazel, *Color It Confusing: A History of Color Television, in* AMERICAN BROADCASTING 77 (Lawrence W. Lichty & Malachi C. Topping eds., 1975).

[24] *Id.* at 78.

[25] *Id.* at 79.

[26] *Id.*

[27] *Id.*

[28] SYDNEY W. HEAD & CHRISTOPHER H. STERLING, BROADCASTING IN AMERICA (Brief ed. 1991), at 53. Note that in 1972, almost two decades after adoption of color standards only half of United States households had color television sets. *Id.*

[29] A. Hill & M. Nakamoto, *Troubled Transmission for the Big Picture Show*, FINANCIAL TIMES, November 17, 1992, at 17.

[30] Find the report and order

[31] *HDTV Systems Called Flawed*, DENVER POST, February 13, 1993, at 2D.

[32] Marjorie Costello, *The Changing Picture*, DEALERSCOPE, June 1992, at 99.

[33] Sources vary on exact figures but generally it is believed that it took about two decades for color television to take off. *See, e.g.*, Jack Clifford, *supra* note 4, at 5. During those two decades, RCA spent $3 billion (in 1988 dollars) on color broadcasting to stimulate the transition. *See* The Big Picture: HDTV and High Resolution Systems, Office of Technology Assessment (1990), at 21 [hereinafter "Big Picture"], citing Consortia and the Development of High Definition Systems: Hearings before the House Subcomm. on Telecommunications and Finance of the Comm. on Energy and Commerce, 100th Cong., (testimony of Barry Whalen).

[34] There was an increase of over 11 million sets in use (10 million to over 21 million)in this three year period. See *infra* notes 16-20 and accompanying text.

[35] It was 12 years after NTSC standard before commercials stations would transmit network programs in color. That year, 1968, set off a boom in set sales that signalled the final conversion to color. SIDNEY W. HEAD, *supra* note 5, at 167.

[36] Color television sets had dropped in price by approximately $1,000 by 1957. *See* Big Picture, *supra* note 33, at 82, citing Boston Consulting Group, *Development of a U.S.-based ATV Industry*, May 9, 1989 [hereinafter "Boston Group"].

[37] Generally thought of as the period of 1948-1957. See discussion in SYDNEY W. HEAD & CHRISTOPHER H. STERLING,*supra* note 3, at 54.

[38] *Id.*

[39] Wolverton hearings, *supra* note 4 at 37 (testimony of Elmer W. Engstrom, vice president, RCA Laboratories Division, David Sarnoff Research Center).

[40] *Id.*

[41] High Definition Television: Hearings Before the Subcomm. on Telecommunication and Finance of the Comm. on Energy and Commerce, 100th Cong., at 20 (testimony of Joseph A. Flaherty, vice president CBS Engineering and Development). In 1953, testimony placed the cost of a color television receiver at $600. Wolverton hearings, *supra* note 4, at 37 (testimony of Engstrom). In 1988 dollars, color television sets cost about $2,250. *See* Boston Group, *supra* note 36, at 82.

[42] Wolverton hearings, *supra* note 4, at 37 (testimony of Engstrom).

[43] A group reporting to the Advisory Committee on Advanced Television uses a figure of $3,700 per set, based on 14.7 percent of average per capita income, the same percentage as represented by the retail price of a color television set in 1966 when complete prime-time color programming by the three major networks was achieved. Working Party 5, Planning Subcomm., Advisory Comm. on Advanced Television Service, F.C.C., *Market Penetration of HDTV* 4 (1992).

[44] *Sharp Cuts Price of Advanced TV*, N.Y. TIMES, Feb. 1, 1992, at A37.

[45] Chris Nolan, *Is Hi-Def Dead?* CABLEVISION, Feb. 22, 1993 at 38. *See also*, Lawrence E. Tannas, Jr., *HDTV Displays in Japan: Projection-CRT System on Top.*, IEEE SPECTRUM, October 1989, at 32.

[46] Nolan, *supra* note 44, at 38.

[47] Mark Lewyn, Lois Therrien, Gary McWilliams and Neil Gross, *HDTV Homes in on Ultimate Test: The Market*, BUSINESS WEEK, April 27, 1992, at 109.

[48] Many electronic technologies take 7-8 years to penetrate the first one percent of the United States market. Larry F. Darby, Economic Potential of Advanced Television Products, NTIA, April 7 1988, at 34-5. For discussions about market penetration of color television receivers and VCR, *see id.*

[49] *Id.* at 32. *See also*, Rupert L. Stowe, Market Penetration of HDTV, Working Party 5 Planning Subcomm., Advisory Comm. on Advanced Television Service, June 20, 1992, at 27-31.

[50] Darby, *supra* note 48, at 33. It is worth noting the assumptions that underlie this rapid diffusion model: (1) healthy world and domestic economies, (2) high levels of consumer spending on electronics products, (3) favorable product development and pricing trends, (4) timely and decisive resolution of critical receiver standards and spectrum questions, (5) vigorous competition among several product sources and technological systems, (6) reasonable replication of market histories of other United States consumer electronic product lines -- particularly VCRs and color TV receivers, and (7) widespread availability of compatible ATV software. *Id.* at 38.

[51] *Id.* at 34. Darby did not factor in the 15-year phase out period for NTSC, so these projections are based on voluntary purchases, not purchases to replace technically obsolete receivers.

[52] *Id.* at 31-2.

[53] *Id.* at 31.

[54] High Definition Television: Hearings before the Subcomm. on Telecommunications and Finance of the House Comm. on Energy and Commerce, 100th Cong., at 39 (1987) (statement of Fred Paxton, chair of Association of Maximum Service Broadcasters) [hereinafter "Markey hearings"].

[55] Letterbox is a term denoting 16:9 images, typically movies at present, when they are shown on a 4:3 television screen. It uses black bands above and below the picture to preserve the original movie's wide-screen format. Broadcasters could use a letterbox format to simulcast images during a transition period from NTSC to HDTV. "Some TV broadcasters in North America fear they will lose audience if they broadcast programs in letterbox format; those fears are borne out in studies of consumer reaction to letterbox." Karen A. Pitts, *How Acceptable is Letterbox for Viewing Widescreen Pictures?* IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, August 1992, at xlii.

[56] *Id.*

[57] Joseph A. Russomanno & Robert Trager, *The Narrow View of Wide Screen: Public Acceptance of Tomorrow's Television* (1993) (unpublished manuscript; presented to International Communication Association convention, Washington, D.C., May 1993).

[58] Cong. Budget Office, Market Forecasts and HDTV's Impact on Other Industries, in HDTV: The Politics, Policies, and Economics of Tomorrow's Television 149, 155 (John F. Rice ed., 1990).

[59] This estimate should reflect the possibility that many consumers would be replacing their sets over that 15 year period. Thus, one must consider the direct financial impact of HDTV on consumers to be the incremental cost. For example if the average cost of an NTSC color television set is $500, then replacing 150 million television sets would cost $75 billion. That leaves an incremental cost of $450 billion due to large screen HDTV technology. While consumers must within 15 years make the transition to HDTV or lose broadcast service, broadcasters also will be forced to invest heavily in transmission equipment to protect their broadcast licenses. One can only imagine what may become of the growing number of low-power broadcast stations who are unlikely to be able to afford the capital investment to make the transition to HDTV.

[60] Clifford *supra* note 3, at 5.

[61] J. Farrell & C. Shapiro, *Standard setting in high-definition television*, Brookings Papers on Economic Activity, 1992, at 74.

[62] N. Lee, *HDTV: The Artists Speak*, AMERICAN CINEMATOGRAPHER, September 1987, at 86.

[63] H. MATHIAS & R. PATTERSON, ELECTRONIC CINEMATOGRAPHY: ACHIEVING PHOTOGRAPHIC CONTROL OVER THE IMAGE (1985).

[64] Clifford *supra* note 3, at 5.

[65] F. Spotnitz, *What Next? We Asked Eight Industry Innovators and They Should Know*, AMERICAN FILM January/February 1989, at 33.

[66] R. Wiley, *The New Video Frontier*, TELEVISION QUARTERLY, Winter 1988, at 8.

[67] D. Bradshaw, L. Kehoe & M. Nakamoto, *Searching for a Clearer Picture of the Future*, FINANCIAL TIMES, Feb. 11, 1993, at 8.

[68] David Morrison, *The Transference of Experience and the Impact of Ideas: Paul Lazarsfeld and Mass Communication Research*, COMMUNICATION 185 (1987).

[69] M. Powell and S. Phillips, *The New Box of Tricks*, DESIGN, December 1988, at 34.

[70] Mark Lewyn, Lois Therrien, Gary McWilliams and Neil Gross, *supra* note 47, at 109.

[71] Lawrence E. Tannas,Jr., *supra*, note 45, at 32.

[72] David Elrich, *The Big Picture*, VIDEO REVIEW, February/March, 1993, at 30.

[73] B. Fox, *Is Television of the Future Already Obsolete?* NEW SCIENTIST, Mar. 9, 1991, at 21.

[74] Hans Fantel, *Television Sets Shape Up for Movies*, N.Y. TIMES, Sept. 13, 1992, at H26.

[75] David Elrich, *supra* note 72, at 32.

[76] Lawrence E. Tannas, Jr., *supra* note 72, at 32.

[77] R. M. Wolfe, *A New HDTV System for Transmitting Film to Theatres by Satellite*, *in* THE NEW TV: A COMPREHENSIVE SURVEY OF HIGH DEFINITION TELEVISION 71-77 (L. CasaBianca ed., 1992).

[78] Hans Fantel, *A Hot Ticket: Home Theatres*, N.Y. TIMES, Dec. 6, 1992, at H16..

[79] Peter W. Mitchell, *US: Peter W. Mitchell*, STEREOPHILE, February 1993, at 73, 75.

[80] James Lull, *The Social Uses Of Television*, HUMAN COMMUNICATION, Fall 1980, at 203.

[81] Howard Blumenthal, *Television's New Resolutions*, AMERICAN FILM, March 1990, at 72.

[82] W. J. McGuire, *The Myth of Massive Media Impact: Savagings and Salvagings*, COMMUNICATION AND BEHAVIOR,Spring 1986, at 223.

[83] Color television was appealing to advertisers because it was the first mass medium to offer reliable color advertising to large audiences. When color television became generally available, most newspapers then did not offer color advertisements and magazines had narrower audiences than did television. Clifford, *supra* note 3, at 5.

[84] J. Gorzelany, *The Next Great Frontier*, CONSUMERS REPORTS, November 1992, at 30.

[85] C. Carbonara & M. Korpi, *HDTV and Film: The issues*, AMERICAN CINEMATOGRAPHER, August 1991, at 60.

[86] J. Flint, *Shooting With the Future in Mind*, BROADCASTING, Oct. 5, 1992, at 42.

[87] The entire process of HDTV market forecasting is problematic because of the assumption that the data are predictive. This problem is confounded by the fact that the data are removed from one context (e.g., color television or VCRs) and applied in a predictive manner to another (HDTV).

[88] Nolan, *supra* note 44, at 35.

[89] *Id.*.

[90] *Id.*

[91] *See* generally, High Definition Television: Hearing Before the Research and Development Comm. and the Investigations Comm. of the Comm. on Armed Services, 101st Cong., *See* also, Nolan *supra* note 44, at 36.

[92] Big Picture, *supra* note 33, at 6.

[93] Markey hearings, *supra* note 54, at 348 (statement of Richard C. Wiley, chair of Federal Communication Commission Advisory Comm. on Advanced Television Service, and attached Interim Report).

[94] The election of Bill Clinton as president may portend even greater governmental interest in high-definition television. Not insignificantly, Vice President Al Gore promoted telecommunication technologies, including HDTV, while he chaired the Subcommittee on Science, Technology and Space of the Senate's Commerce, Science and Transportation Committee.

"COLORIZING" HDTV: IS CONSUMER ADOPTION OF COLOR TELEVISION AN APPROPRIATE COMPARISON FOR ACCEPTANCE OF HIGH-DEFINITION TELEVISION?

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Association for Education Journalism and Mass Communication
1993 Convention,
Kansas City, Missouri

"COLORIZING" HDTV: IS CONSUMER ADOPTION OF COLOR TELEVISION AN APPROPRIATE COMPARISON FOR ACCEPTANCE OF HIGH-DEFINITION TELEVISION?

In the last decade, high-definition television (HDTV) has been one of the most discussed emerging consumer technologies. The transition from the current television transmission standard (known as NTSC)[1] to HDTV has been heralded as a revolutionary improvement in television viewing unmatched since the development of color television in the 1950s. Similar optimistic projections were heard in the congressional debates about color television. For example, during United States Senate and House of Representatives committee hearings on the topic[2] there were many predictions of high consumer acceptance. The cost of television receivers would drop dramatically once in mass production, it was said, and consumers gladly would pay more for better picture quality. The public should not be denied the opportunity to have a better quality television image, it was argued. The expeditious development of color television for home use was in the public interest. Substitute "high-definition" for "color" in these statements and they become the contemporary optimistic projections for the success of HDTV, even though consumers will have to replace each of their current television sets with new receivers in order to watch programs in high-definition.

While viewers still could receive broadcast signals with their black-and-white receivers, new sets were required to watch color transmissions in color. Does this similarity between color television and HDTV -- that for each a consumer needs to purchase new equipment -- make consumer acceptance of color television an accurate analogy for the future of HDTV? Today, 90 percent of television sets in United States homes are color receivers.[3] If the color television/HDTV analogy is correct, then, there will be an enormous American market for HDTV. The analogy also may be appropriate for another reason: Color television claimed to substantially improve the picture quality of the system it replaced, and HDTV makes the same claim.

This paper will analyze the appropriateness of using the adoption of color television as both a predictive tool of consumer market penetration of HDTV and as a valid aesthetic comparison which, if accurate, may stimulate consumer purchases of HDTV receivers similar to the way consumers made the transition to color television sets. This paper will examine two factors pertinent to the comparison of color television and HDTV. First, color television and HDTV standard-setting processes are summarized and comparisons made between the two. Second, color television's success, arguably based on its aesthetic improvement over black and white television, is compared with the posited audio and video superiority of HDTV over NTSC to determine if this factor may lead to consumer acceptance of HDTV.

A. Comparisons between the Adoption of Color Television and HDTV Standards

1. The Development of a Color Television Standard

The development and selection of a color television standard was not a smooth policy process. Instead, it was lengthy (taking more than a decade), heavily politicized and filled with poorly supported, overly-optimistic rhetoric about immediate, wide-spread consumer acceptance.

Color technology emerged during the policy debates over a standard for black and white television. On January 27, 1941, the Federal Communications Commission (FCC) received a report from the NTSC analyzing five American color television systems.[4] A month later, the FCC adopted the current black and white standard and, at the same time, recommended further testing of color systems. Color capabilities were still rudimentary and systems required at least twice as much bandwidth as did the newly accepted NTSC standard for monochrome broadcast. Further innovations in color television transmission (including narrowing the bandwidth) were delayed by World War II. In 1942, the manufacturing of all television sets was discontinued for four years. At that time only 3,000 sets were in public hands.[5] In 1944 and 1945, the FCC resumed its television activities and assigned VHF channels for black and white broadcasts and a portion of the UHF band for experimental television broadcasts in both black and white and color.

In 1947, the Columbia Broadcasting System (CBS) petitioned the FCC to establish commercial color television standards, preferably those proposed by CBS.[6] The FCC concluded that the standard CBS requested was inappropriate because it needed a bandwidth of 14.5 megahertz. Before sufficient technical progress was made on the CBS color standard, the FCC, on September 30, 1948, stopped issuing new television station licenses.[7] During 1948, the television manufacturing industry had produced 975,000 receivers, bringing the total number of sets in use to approximately 1.16 million.[8] In one year the television audience had increased 4,000 percent.[9] In another decade there would be as many sets in use as families in the United States.[10]

During 1949 and early 1950, extensive congressional hearings were held on color television. Three standards were under consideration, i.e., those proposed by Color Television, Inc. (CTI), CBS, and the Radio Corporation of America (RCA). According to analyses done by the Advisory Committee on Color Television,[11] at the behest of Senator Ed Johnson (R-Colo.), Chairman of the Senate Committee on Interstate and Foreign Commerce, the CBS field sequential system offered superior color fidelity but had problems with flicker and, most crucially, was incompatible with the existing black and white standard.[12] The CTI system was compatible with the existing standard, but had flicker problems and made poor use of the channel width.[13] The RCA system used channel width most efficiently and was compatible with the existing standard, but had the poorest color fidelity.[14] While these hearings were in progress, the number of black and white receivers produced in the United States had reached 4.16 million.[15]

On October 11, 1950, the FCC, with more than 10.5 million black and white sets in use in the United States, accepted the incompatible color standard proposed by CBS.[16] Under this standard, consumers would have to purchase and install television adapters to receive color broadcasts in black and white. To receive the signal in color, even more equipment was required. However, several events occurred that prevented widespread adoption of the CBS standard. RCA challenged the decision and effectively stalled the process until the Supreme Court upheld the FCC decision and struck down a temporary restraining order.[17] On June 25, 1951, the FCC announced that all regular stations could broadcast color programs in accordance with the CBS standards.[18] Within five months, on Nov. 20, 1951, the federal National Production Authority (NPA) prohibited the production of color television sets for home use.[19] The NPA argued that such an industry would divert strategic material, personnel and manufacturing facilities from the Korean War effort. Seven months later the order was modified to permit limited production with NPA permission. Finally, in March 1953 NPA abolished the order. Confounding this 18-month delay was the fact that total monochrome receivers produced in the United States by the end of 1952 had reached 23 million, of which an estimated 21.2 million were in use.[20] The dilemma facing the broadcasting and manufacturing industries is well framed by the 1953 comments of Jack Gould, New York Times television columnist:

> The fatal drawback to the CBS system is that it is virtually impossible to introduce because it is incompatible with present TV. When CBS puts on a color program, the owner of a black and white set sees just a lot of jibbly lines. To make a picture in black and white, the set owner must buy an adapter. Not many people will want to spend money just to obtain in a different way what they have now. The problem is even more elemental on the programming end. Who is going to spend the money to put on a color show, if it means the loss of virtually all of the existing audience?[21]

Whether it was because of the succession of delays or the poor choice of a standard, as of 1953 no sets had been manufactured to the CBS specifications and no public broadcasting had occurred under the CBS standard. The lack of progress prompted the House of Representatives to hold hearings on the status of color television. Dr. Elmer W. Engstrom, vice president in charge of RCA Laboratories Division and instrumental in developing the RCA standard, testified that RCA correctly predicted the failure of the field sequential standard.

> At that time RCA took the position that this incompatible system would never be successful because, with it, there would be a minimum amount of color broadcasting available and there would never be a public demand for the type of color television sets which the proponents of the incompatible system had demonstrated before the FCC and that is exactly what has happened.[22]

Meanwhile, the NTSC had adopted the RCA compatible standard and recommended its acceptance by the FCC. On December 17, 1953, the FCC gave its approval.[23] Even then color television sets did not sell rapidly. Three years later, only one percent of the United States television households had color sets.[24] An RCA 15-inch color set sold for $1,000 in 1954. Set sales did not start to rise until 1964.[25] Not all television broadcasting was in color, and the number of color transmissions even declined from 1953 to 1964. Only NBC maintained an extensive schedule of color broadcasts.[26] Color set sales finally increased significantly after 1966 when NBC began to broadcast its full schedule in color.[27] Consumer acceptance of color television grew rapidly in the late-1960s through the mid-1970s.[28]

2. The Status of FCC Policy on HDTV Standards

"High-definition" refers to technological improvements increasing the resolution of televised images. All proposed HDTV systems use a wide-screen format with a movie-like 16:9 aspect ratio (the ratio of screen width to screen height), compared with the present 4:3 world-wide television standard. The wide-screen format would eliminate the need to crop the sides of movie images or use a "letterbox" format when films, either broadcast, videotape or laser disk, are displayed on television sets. The current NTSC transmission standard provides a nominal 525 scanning lines for each televised image transmitted at a rate of 60 fields per second, equivalent to 30 frames per second. Some of the HDTV transmission systems proposed for the United States or in operation in Europe or Japan approximately double the present resolutions and add high-quality, multichannel digital sound. The common frame of reference is that an HDTV image has the clarity and detail of a 35mm movie image.

The United States entered the race to set HDTV standards later than either Japan or Europe, but like them started by considering incremental improvements to the existing analog television system. For example, RCA's Sarnoff labs spent $40 million between the late- 1970s and mid-1987 on analog-based advanced television research. CBS and other smaller groups also undertook research and development work.[29] However, as computer software technologies, particularly data compression, improved in the late 1980s and early 1990s, it became apparent that a digital system offered both superior performance and opportunities for integration with computers not available with analog systems. That insight helped the United States leapfrog Japan and Europe and secure the lead in the international race to develop an HDTV standard for mass market receivers.

From 1989 through 1991, congressional committees held numerous hearings on HDTV and the government's role in promoting this new technology. That debate now has subsided and the focus has shifted to choosing an HDTV technology. The FCC appointed an advisory committee, the Advisory Committee on Advanced Television Service (ACATS), to test and recommend a technical standard for HDTV transmission in the United States.[30] Five consortia submitted systems for testing, four of which made all-digital proposals. In February 1993, the ACATS announced that none of the five systems it had tested was sufficiently advanced. The committee recommended that four of the five systems be improved and retested.[31] The FCC has set a mid- to late-1993 deadline for determination of the HDTV standard, and proposed a 15 year phase-out of the NTSC signal. To complete the transition, within five years of adoption of an HDTV standard broadcasters would need to apply for licenses and build facilities to simulcast HDTV and NTSC signals. At year 15, broadcasters would no longer be permitted to transmit NTSC signals and any NTSC television sets would be useless.[32] Under FCC decisions, broadcast television would be exclusively in high-definition, and no NTSC set would show a viewable broadcast picture.

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3. Comparing the Development of Color Television and HDTV Standards

It took 12 years and a complete reversal of the initially adopted standard for color television to become a reality in the United States. Even when the standard selection process was completed in 1953, however, consumers did not rush to replace their black and white television sets.[33] To suggest that the slow penetration of color television was because of consumer apathy about the technology would be oversimplistic. There were numerous factors that contributed to the slow penetration of color television, many of them unique to the historical circumstances within which color television emerged. Some of the delays in implementing the CBS standard were the result of unforeseen circumstances beyond the control of the FCC. For instance, RCA's lawsuit tied up the CBS standard for almost a year. The NPA's order also was an unexpected restraint on the development of the consumer market. Once the NPA order was announced, all broadcasters, including CBS, voluntarily complied and stopped experimental color broadcasts, and all receiver production came to an abrupt halt. Arguably, the transition to a noncompatible color standard would have been easier if implemented immediately, since there were far fewer black and white receivers in public hands in 1950 compared with 1953.[34]

All these considerations may have prevented the success of the CBS standard, but they do not explain why, once the RCA standard was chosen, color receiver penetration remained painfully slow.[35] This almost stagnant development was in the face of dropping color set prices[36] and in the midst of the "golden age" of television.[37] According to Head and Sterling, during this time "networks put first priority on stimulating people to buy sets."[38] But after 20 years of having color television sets available, and almost 10 years of full-time color broadcasting, only 50 percent of the United States television households had purchased color sets. These conditions, if predictive of HDTV development, do not bode well for HDTV as a consumer product. The 20-year slow growth period for color television is significantly longer than the proposed 15-year phase-in period for HDTV proposed by ACATS. Even if the penetration of HDTV is similar to color television and, after 20 years is in place in 50 percent of United States households, the other half of American homes will find themselves without broadcast service if they don't then go buy a HDTV receiver.

In retrospect, compatibility appears to have been a requisite though not sufficient condition for the eventual success of color television in the consumer market. While there was an incompatible color standard (the CBS technology), the color television receiver industry was unsuccessful. Primarily, this failure was due to the increasingly well-established base of black and white televisions. Because HDTV transmissions will be incompatible with the existing television broadcasting standard, the color television experience may be instructive.

Color television receiver cost was another consideration in initial lack of consumer acceptance. CBS stated that color receivers would initially cost approximately \$300.[39] Engstrom testified that color sets initially would cost 50 percent more than black and white sets, and then drop to 25 percent more.[40] However, color receivers first entered the market at \$1000 in 1953 dollars,[41] and even then, manufacturers were losing money on each set sold.[42]

HDTV receivers are likely to cost approximately \$3,700 dollars when first placed on the market.[43] (Sharp announced an \$8,000 unit in early 1992, but costs certainly will decline with competition and economies of scale.[44]) Smaller HDTV receives will cost less than large-screen sets, but the smaller size makes it harder to detect the advantages of HDTV over the NTSC standard. According to Ed Horowitz, Viacom senior vice president, "If you're talking about going into a 25-inch or 30-inch television set . . . [y]ou can tell the difference, but it won't matter."[45]

It is possible that HDTV will make its initial headway among "technophiles," in particular those who are likely to buy big screen or projection televisions.[46] However, in "gadget-crazy Japan, consumers haven't rushed to tune in even though NHK has been beaming HDTV eight hours a day. TV makers had once expected to blanket Japanese

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homes by now. But only a few hundred 35-inch-plus sets have been sold . . . ."[47] Those who immediately purchase new electronics make up a only a small portion of the consumer market[48] and, while it may be a viable niche for HDTV, such a small consumer reception for the technology brings into question the impact on the all the other consumers who might not want to purchase an HDTV set, but will be forced to do so when the NTSC standard is phased out.

Optimistic projections of HDTV acceptance are based on models of rapid diffusion of new technologies.[49] According to forecasting models presented to the National Telecommunications and Information Agency, under a model of rapid diffusion, such as occurred with VCRs, new electronic products generally achieve one percent household penetration in 7-8 years.[50] Using such a model, HDTV would be in 25 percent of United States television households before the 15-year phase-in period is over, and 70-93 percent after 20 years.[51] However, under a more sluggish model of diffusion, exemplified by projection television, reaching a one percent penetration level (1 million sets) for HDTV receivers could take 15 years.[52] Under this model, in fact, markets may never materialize (for example, AM stereo, picturephones and videotex).[53] However, HDTV may be different in that, regardless of the natural rate of market diffusion, the market will be forced to exist due to FCC-mandated transition deadlines.

Currently, there is an established base of television sets in the United States valued at $80 million dollars,[54] and there is no direct evidence that consumers are willing to pay more for HDTV sets than for NTSC sets. Studies on consumer preference are limited and many that are done are proprietary. One 1992 study reporting on eight studies of the letterbox format[55] using NTSC signals concluded that "consumer reactions to widescreen images are highly favorable."[56] However, anothers found only limited support for wide-screen sets carrying NTSC programming.[57] In the latter, viewers tended not to like NTSC signals shown on an HDTV receiver. They reported that the image was cropped on the top and bottom, distorted to fit the new screen dimensions or presented with blacks strips on the left and right sides to maintain the NTSC aspect ratio. Until sufficient HDTV programming is available, these are the ways in which HDTV set owners will view television. Consumers did not switch to an incompatible color system. Even when a compatible system was available, they bought color sets very slowly and only after set prices fell considerably and networks programmed full-time in color.

A 1989 Congressional Budget Office report compared three "very optimistic" forecasts of the potential HDTV market.[58] Fulfillment of these forecasts will be assured if NTSC signals are replaced with HDTV transmissions within 15 years. Consumers will, in effect, be forced to invest in the technology to maintain access to broadcasting services. The total conversion of 150 million television sets to HDTV receivers may cost up to $525 billion.[59]

2. HDTV's Aesthetic Improvements: Will Consumer Acceptance Follow?

Jack Clifford, chairman of Colony Communications, a broadcast, cable and telecommunications company, contrasts the proposed shift to HDTV with the evolution from black and white television to color.

> The change from black and white to color was a more perceivable and more dramatic occasion than the change to HDTV will be, in spite of the euphoric announcements that are being made today. The average American will not recognize as deeply and effectively the change to a high resolution television system as he did the change to color--and yet it took 20 years before color became a business.[60]

Proponents of HDTV claim that it is so distinctly different from NTSC transmissions -- as color was markedly different from black and white -- that consumers cannot help but be impressed and, therefore, accept the financial cost of replacing current television sets with HDTV receivers. However, some who have seen HDTV are not so impressed: "While the resolution is certainly much better than NTSC resolution, we do not agree that it could be compared with 35 millimeter film,"[61] says film director Francis Ford

Coppola, who has experimented with high-definition video production. Coppola said the standards under consideration in the United States are "nothing but souped-up NTSC." He says HDTV needs about 2,000 lines to be equivalent to 35mm film. "Unfortunately, everyone's arguing not to make it better, but to make it worse. They're saying that it's not even necessary to make it be as good as it is, where as a filmmaker, I'm saying it's just on the edge of being good enough."[62]

Using 35mm film as a point of reference can be misleading in another respect: Film technology is constantly improving. Kodak testing has shown that an image on 35mm 5247 negative film is equivalent to a scanned image of 2,330 lines. NHK, the Japanese television company, also conducted tests showing that color transparency film was comparable to an image with 1,500 lines.[63] Both surpass the proposed HDTV resolution of 1125 lines.

Would an average television viewer be unimpressed by HDTV? Viewers respond to content, not technology. "I predict that a lousy motion picture presented in HDTV on HBO . . . will get no more viewing than a lousy movie in NTSC," Clifford says.[64] Or, as the maker of laser disks put it, "The same crap that is coming out of Hollywood is going to come out of these technologies, by and large."[65] And Richard E. Wiley, a former chair of the FCC and head of the commission's Advisory Committee on Advanced Television Service, acknowledged "the public's alleged lack of concern in having the absolute 'best' television picture available."[66]

In Europe it was feared viewers would not respond to the quality offered by HDTV.

> To the exasperation of many television engineers, viewers appear quite content to watch fuzzy pictures on tiny portable televisions with aerials made out of coathangers. And most viewers are prepared to ignore, or at least tolerate, the deterioration in picture quality when watching a programme which has been recorded at home on a VCR.[67]

Indeed, the importance of content over technology has a historical precedent with another broadcast consumer product. In the 1930s, when Frank Stanton was conducting research on radio audiences, he was surprised to find that most listeners were more concerned with programming than with signal strength or reception quality.[68] More recently, a market survey for Ferguson, which for a decade has been the biggest seller of large-screen televisions in Britain, found that 60 percent of buyers initially were attracted to a set by the appearance of a model's cabinet, 35 percent by the price and 23 percent by the picture quality.[69] This may indicate that buyers find the picture quality similar among sets, but it also may signify a general level of satisfaction with current picture quality.

Another reason consumers may not respond enthusiastically to HDTV is that the benefits of a sharper image are most noticeable only on a large screen. Researchers at the Massachusetts Institute of Technology's Media Laboratory found that at nine feet from the screen, a typical viewing distance, most viewers could not see a difference between a 28-inch HDTV set and a similarly sized conventional television. Screens of 35 inches or more are the key to HDTV's success, but projection television sets are too dim to be viewed comfortably in a brightly lit room.[70] Further, it has been estimated that projection television sets with 40-inch screens may weigh 150 pounds, protrude two feet from a wall and cost $3,000. A direct-view television would be heavier, bulkier and more expensive.[71] Two manufacturers recently announced 50- and 55-inch rear-projection NTSC sets selling for $4,999 and $4,495 respectively. And RCA has announced that in 1993 it will sell a sophisticated, 16:9, 34-inch direct-view television with 750 lines of resolution for $4,999.[72] Large, flat-panel displays that could be hung on the wall like a picture would overcome some of the disadvantages of projection or direct-view sets, but they are not likely to be ready before the turn of the century.[73] Even if HDTV is perceived as a significant visual improvement over NTSC (as color was vis-a-vis black-and-white television), the remaining criticisms of television programming and display problems likely will limit penetration of HDTV into American homes for a number of years.

Despite these potential problems, HDTV will offer viewers a different experience because it will present a different shape than current NTSC television. Except for the change in resolution, this will be the most obvious difference between the formats, and it alone will affect the viewing experience. The wide-screen format is so significant a change that, as noted, television set manufacturers are producing sets using the more horizontal image even before HDTV is implemented. The main reason for the early adoption of the wide-screen format is to accommodate videotapes and laser disks of movies that retain the dimensions of the original films so prized by film afficionados. This overcomes some of the problems inherent in cropping and panning, which are used to fit wide-screen movies on more nearly square television screens. With the wide-screen format, "You'll see more buffaloes in 'Dances With Wolves,'" as one video executive put it.[74]

Unfortunately, a 16:9 aspect ratio is not a panacea. For those who want to watch film classics from the 1940s, for example, the wider screen will not help and, in fact, will require black strips on the sides of the picture as letterboxing now does on the top and bottom of the picture. Nor will the new screen shape accommodate movies shot in more unusual formats, such as Cinerama, which has a 3:1 aspect ratio, Ultra-Panavision, which is 2.76:1, and CinemaScope, which is 2.35:1.[75] A Cinerama film shown on a 16:9 screen still will lose nearly half the image. So cropping or panning techniques will be needed even with a 16:9 format.

When the widescreen format is combined with larger screen sizes, viewers will feel more like they are in the scene they are watching. This, too, will change the viewing the experience. For most people watching NTSC sets, a comfortable viewing distance is about seven times the height of the screen. The higher resolutions of HDTV make for a comfortable viewing distance of about 3.3 times the height of the screen. The reason for this is that sitting any closer would reveal the scanning lines that make up the television image, and sitting farther away would hide some of the detail in the picture. Therefore, either viewers will sit closer to an HDTV set than to an NTSC set, or they will use a larger set (50 inches measured diagonally compared with 19 inches, for example). But the most significant feature of the wide-screen picture is that it involves a 30-degree angle of view compared with a 10-degree angle for the boxier NTSC image. This increased peripheral viewing and more life-size imaging is more involving for the viewer.[76] One drawback of the increased image width is that the eye's peripheral vision is more sensitive to flicker, which is inherent in film shot at 24 frames per second and video displaying 30 frames per second.

Another way in which viewers will become more involved is through theater-like, CD-quality sound. This important aspect of the viewing experience often is overlooked, but filmmakers and theater owners realize its importance. One proposed system for distributing motion pictures to theaters is via HDTV satellite transmissions. This would have the capability of including the four channels of audio (left, right, center and rear) that create the theatrical surround-sound effect.[77] High-quality, five-channel sound (left front, right front, center front and two rear channels) already is available to those who have the proper equipment. "Psychologically, the impact is astonishing. Reaching the viewer from all sides, multidirectional sound greatly intensifies the viewer's involvement in the film."[78] It is likely HDTV also will include five-channel audio.[79]

This greater viewer involvement has serious implications for the way people typically use television. Instead of being constant background noise, as it often is, while people talk, eat, sleep or do any number of routine household chores, the turned on television set may be more demanding of the viewer's attention. Lull has identified background noise as one of several structural uses of television.[80] In addition, by being more demanding of attention, HDTV may change the way television regulates behavior, another of Lull's structural uses of television. Instead of talking with family members or others during commercial breaks or during slow parts of a program, viewers may become absorbed in the large, high-definition images.

> The experience of watching a large projection screen is a special one. The additional detail and heightened sense of reality are so significant that some viewers find their minds drifting when viewing a traditional 25- or 27-inch screen.[81]

This might please advertisers, but, more important, it would have the entertainment function of television move to the fore, displacing some of the relational uses of the technology. These include communication facilitation, which, if disrupted, could alter the equilibrium of the social unit. Alternatively, and of possible concern to advertisers, some research has found that divided attention, as when television is in the background, may enhance message persuasiveness because viewers would not be able to argue internally against the message.[82] If HDTV does change the social relations of television viewing, and thus viewer attention, the value for advertisers remains to be seen.[83]

It is worth noting that regardless of whether HDTV will change the way people watch television, it already has changed the way television and films are produced. The importance of films to HDTV cannot be overestimated; because movies are shot in wide-screen on 35mm film with multichannel audio, they already are high-definition and will be a staple of early HDTV programming.[84] Indeed, since 1957, 85 percent of prime-time programming produced in the United States has been shot on 35mm film.[85] Moreover, some movies are being shot in part or entirely in HDTV or are using HDTV in some or all post-production work. This work has revealed some of the benefits and limitations of HDTV for the film industry. In other cases, television programs already are being shot with an eye toward later conversion to wide-screen HDTV format. For example, Shukovsky-English Entertainment is taking this route to protect its investment in "Love and War" for future syndication on the wide screen.[86]

The wide-screen, multi-speaker, theater-like viewing experience promised by HDTV may have aesthetic qualities so markedly different from watching current NTSC television that consumers will quickly accept it, as they did audio tapes and compact discs in place of vinyl records. On the other hand, the differences between HDTV and NTSC pictures on the smaller HDTV television sets that most consumers conceivably could afford may not be so noticeable that there will be widespread consumer demand for high-definition.

3. Summary

The development of the color television market in some ways is an appropriate analogy for HDTV.[87] Both involve a visual improvement over the former television images, and both require new consumer equipment. The example of color television, then, may offer insight into the complexities that HDTV could face in the consumer television market. But optimistic projections based on the successful end-result of color television miss the point of the difficult journey that was made. One particular condition of color television, essential to its success, was the eventual decision to require a compatible standard with existing black and white technology. Current proposals for HDTV technology do not overcome the barrier of incompatibility. If HDTV follows a path similar to the CBS color television standard -- that is, without compatibility -- it is likely to fail in the consumer market unless consumers are forced to purchase HDTV sets in order to watch any broadcast television at all.

HDTV, like color television, offers visual improvements over the NTSC standard. But, also like color television, its perceived value cannot be extracted from considerations of cost, the importance of addressing programming content, the difficulties of screen display and an unforeseen economic, social and technological future. Digital signal compression in cable television, for example, also will have an impact on HDTV as a viable consumer product. John Malone, president of Tele-Communications, Inc., the nation's largest cable system operator, has announced plans for 500 channels of television, delivered by video compression.[88] Bob Sitter, a Home Box Office executive, has said, "If customers are satisfied with digital compression, HDTV could become to the consumer electronics business what the Edsel was to the auto industry."[89] The introduction of color television did not have to contend with such technological innovations as video compression, which already may have made HDTV obsolete.[90]

But these criticisms of the assumptions underlying consumer acceptance of HDTV may not necessarily spell doom for the technology. It already is in use in the film and television industries as a production tool. It has applications to the military[91] and space[92] industries. It is integrally related to various technologies, such as digital signal processing, high performance displays, optical data storage and high resolution systems. Its importance in facilitating convergence among technologies suggests that HDTV has multiple applications in non-consumer markets.[93]

Color television was introduced as a component of a larger governmental policy regarding the direction of broadcasting in the United States. Analogously, HDTV increasingly is being considered in light of a national telecommunications policy. It may be argued that considering the growing importance of having separate telecommunications technologies interfacing with one another, there is a need for an all-digital HDTV system. That would shift the focus away from HDTV initially as a consumer product.[94] If the color television analogy is instructive, and consumer acceptance of HDTV will be limited for many years, its interfacing capabilities could give HDTV time to develop while waiting for consumers to catch up.

NOTES

[1] Established by the National Television System Committee and adopted by the Federal Communications Commission in 1941. *See* F. LESLIE SMITH, PERSPECTIVES ON RADIO AND TELEVISION 29 (3d ed. 1990).

[2] *See infra* text accompanying notes 11-15.

[3] Jack Clifford, *HDTV from a Business Perspective*, HD WORLD REVIEW, Spring 1991, at 5.

[4] Color Television: Hearings Before the Comm. on Interstate and Foreign Commerce, 83rd Cong., 1 (1953) (statement of Hon. Charles A. Wolverton, chair) [hereinafter "Wolverton hearings"].

[5] *Id.* at 2. According to Sidney Head, at the start of World War II 10,000 receivers had been sold to the public. SIDNEY W. HEAD, BROADCASTING IN AMERICA 162 (3d ed. 1976).

[6] Wolverton hearings, *supra* note 4, at 2.

[7] FCC Sixth Report and Order, 41 FCC 148.

[8] Wolverton hearings, *supra* note 4, at 3. Other sources gives estimates of 250,000 receivers. *See* SIDNEY W. HEAD, *supra* note 5, at 164.

[9] *Id.* at 162.

[10] *Id.*

[11] The Present State of Color Television: Report of the Advisory Comm. on Color Television to the Comm. on Interstate and Foreign Commerce, 81st Cong., (July 14, 1950).

[12] *Id.* at 30.

[13] *Id.* at 24.

[14] *Id.* at 35.

[15] Wolverton hearings, *supra* note 4, at 3.

[16] *Id.*

[17] *Id.* at 4.

[18] *Id.*

[19] *Id.*

[20] *Id.* Others give estimates of 15 million television sets. *See* SIDNEY W. HEAD, *supra* note 5, at 164.

[21] Jack Gould, *The Present Status of Color TV*, N. Y. TIMES, Mar. 15, 1953 at 13, col. 1.

[22] RCA engineers, in fact, experimented with the field sequential system from 1940-45. They determined the technology was not a technically or economically sound basis for a color television system and switched research efforts to an all-electronic simultaneous system (even though at the time it required a wider bandwidth). *See* Wolverton hearings, *supra* note 4, at 8 (testimony of Dr. Frank Stanton, president, CBS).

[23] Lynn A. Yeazel, *Color It Confusing: A History of Color Television*, *in* AMERICAN BROADCASTING 77 (Lawrence W. Lichty & Malachi C. Topping eds., 1975).

[24] *Id.* at 78.

[25] *Id.* at 79.

[26] *Id.*

[27] *Id.*

[28] SYDNEY W. HEAD & CHRISTOPHER H. STERLING, BROADCASTING IN AMERICA (Brief ed. 1991), at 53. Note that in 1972, almost two decades after adoption of color standards only half of United States households had color television sets. *Id.*

[29] A. Hill & M. Nakamoto, *Troubled Transmission for the Big Picture Show*, FINANCIAL TIMES, November 17, 1992, at 17.

[30] Find the report and order

[31] *HDTV Systems Called Flawed*, DENVER POST, February 13, 1993, at 2D.

[32] Marjorie Costello, *The Changing Picture*, DEALERSCOPE, June 1992, at 99.

[33] Sources vary on exact figures but generally it is believed that it took about two decades for color television to take off. *See, e.g.*, Jack Clifford, *supra* note 4, at 5. During those two decades, RCA spent $3 billion (in 1988 dollars) on color broadcasting to stimulate the transition. *See* The Big Picture: HDTV and High Resolution Systems, Office of Technology Assessment (1990), at 21 [hereinafter "Big Picture"], citing Consortia and the Development of High Definition Systems: Hearings before the House Subcomm. on Telecommunications and Finance of the Comm. on Energy and Commerce, 100th Cong., (testimony of Barry Whalen).

[34] There was an increase of over 11 million sets in use (10 million to over 21 million)in this three year period. See *infra* notes 16-20 and accompanying text.

[35] It was 12 years after NTSC standard before commercials stations would transmit network programs in color. That year, 1968, set off a boom in set sales that signalled the final conversion to color. SIDNEY W. HEAD, *supra* note 5, at 167.

[36] Color television sets had dropped in price by approximately $1,000 by 1957. *See* Big Picture, *supra* note 33, at 82, citing Boston Consulting Group, *Development of a U.S.-based ATV Industry*, May 9, 1989 [hereinafter "Boston Group"].

[37] Generally thought of as the period of 1948-1957. See discussion in SYDNEY W. HEAD & CHRISTOPHER H. STERLING, *supra* note 3, at 54.

[38] *Id.*

[39] Wolverton hearings, *supra* note 4 at 37 (testimony of Elmer W. Engstrom, vice president, RCA Laboratories Division, David Sarnoff Research Center).

[40] *Id.*

[41] High Definition Television: Hearings Before the Subcomm. on Telecommunication and Finance of the Comm. on Energy and Commerce, 100th Cong., at 20 (testimony of Joseph A. Flaherty, vice president CBS Engineering and Development). In 1953, testimony placed the cost of a color television receiver at $600. Wolverton hearings, *supra* note 4, at 37 (testimony of Engstrom). In 1988 dollars, color television sets cost about $2,250. *See* Boston Group, *supra* note 36, at 82.

[42] Wolverton hearings, *supra* note 4, at 37 (testimony of Engstrom).

[43] A group reporting to the Advisory Committee on Advanced Television uses a figure of $3,700 per set, based on 14.7 percent of average per capita income, the same percentage as represented by the retail price of a color television set in 1966 when complete prime-time color programming by the three major networks was achieved. Working Party 5, Planning Subcomm., Advisory Comm. on Advanced Television Service, F.C.C., *Market Penetration of HDTV* 4 (1992).

[44] *Sharp Cuts Price of Advanced TV*, N.Y. TIMES, Feb. 1, 1992, at A37.

[45] Chris Nolan, *Is Hi-Def Dead?* CABLEVISION, Feb. 22, 1993 at 38. *See also*, Lawrence E. Tannas, Jr., *HDTV Displays in Japan: Projection-CRT System on Top.*, IEEE SPECTRUM, October 1989, at 32.

[46] Nolan, *supra* note 44, at 38.

[47] Mark Lewyn, Lois Therrien, Gary McWilliams and Neil Gross, *HDTV Homes in on Ultimate Test: The Market*, BUSINESS WEEK, April 27, 1992, at 109.

[48] Many electronic technologies take 7-8 years to penetrate the first one percent of the United States market. Larry F. Darby, Economic Potential of Advanced Television Products, NTIA, April 7 1988, at 34-5. For discussions about market penetration of color television receivers and VCR, *see id.*

[49] *Id.* at 32. *See also*, Rupert L. Stowe, Market Penetration of HDTV, Working Party 5 Planning Subcomm., Advisory Comm. on Advanced Television Service, June 20, 1992, at 27-31.

[50] Darby, *supra* note 48, at 33. It is worth noting the assumptions that underlie this rapid diffusion model: (1) healthy world and domestic economies, (2) high levels of consumer spending on electronics products, (3) favorable product development and pricing trends, (4) timely and decisive resolution of critical receiver standards and spectrum questions, (5) vigorous competition among several product sources and technological systems, (6) reasonable replication of market histories of other United States consumer electronic product lines -- particularly VCRs and color TV receivers, and (7) widespread availability of compatible ATV software. *Id.* at 38.

[51] *Id.* at 34. Darby did not factor in the 15-year phase out period for NTSC, so these projections are based on voluntary purchases, not purchases to replace technically obsolete receivers.

[52] *Id.* at 31-2.

[53] *Id.* at 31.

[54] High Definition Television: Hearings before the Subcomm. on Telecommunications and Finance of the House Comm. on Energy and Commerce, 100th Cong., at 39 (1987) (statement of Fred Paxton, chair of Association of Maximum Service Broadcasters) [hereinafter "Markey hearings"].

[55] Letterbox is a term denoting 16:9 images, typically movies at present, when they are shown on a 4:3 television screen. It uses black bands above and below the picture to preserve the original movie's wide-screen format. Broadcasters could use a letterbox format to simulcast images during a transition period from NTSC to HDTV. "Some TV broadcasters in North America fear they will lose audience if they broadcast programs in letterbox format; those fears are borne out in studies of consumer reaction to letterbox." Karen A. Pitts, *How Acceptable is Letterbox for Viewing Widescreen Pictures?* IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, August 1992, at xlii.

[56] *Id.*

[57] Joseph A. Russomanno & Robert Trager, *The Narrow View of Wide Screen: Public Acceptance of Tomorrow's Television* (1993) (unpublished manuscript; presented to International Communication Association convention, Washington, D.C., May 1993).

[58] Cong. Budget Office, Market Forecasts and HDTV's Impact on Other Industries, in HDTV: The Politics, Policies, and Economics of Tomorrow's Television 149, 155 (John F. Rice ed., 1990).

[59] This estimate should reflect the possibility that many consumers would be replacing their sets over that 15 year period. Thus, one must consider the direct financial impact of HDTV on consumers to be the incremental cost. For example if the average cost of an NTSC color television set is $500, then replacing 150 million television sets would cost $75 billion. That leaves an incremental cost of $450 billion due to large screen HDTV technology. While consumers must within 15 years make the transition to HDTV or lose broadcast service, broadcasters also will be forced to invest heavily in transmission equipment to protect their broadcast licenses. One can only imagine what may become of the growing number of low-power broadcast stations who are unlikely to be able to afford the capital investment to make the transition to HDTV.

[60] Clifford *supra* note 3, at 5.

[61] J. Farrell & C. Shapiro, *Standard setting in high-definition television*, Brookings Papers on Economic Activity, 1992, at 74.

[62] N. Lee, *HDTV: The Artists Speak*, AMERICAN CINEMATOGRAPHER, September 1987, at 86.

[63] H. MATHIAS & R. PATTERSON, ELECTRONIC CINEMATOGRAPHY: ACHIEVING PHOTOGRAPHIC CONTROL OVER THE IMAGE (1985).

[64] Clifford *supra* note 3, at 5.

[65] F. Spotnitz, *What Next? We Asked Eight Industry Innovators and They Should Know*, AMERICAN FILM January/February 1989, at 33.

[66] R. Wiley, *The New Video Frontier*, TELEVISION QUARTERLY, Winter 1988, at 8.

[67] D. Bradshaw, L. Kehoe & M. Nakamoto, *Searching for a Clearer Picture of the Future*, FINANCIAL TIMES, Feb. 11, 1993, at 8.

[68] David Morrison, *The Transference of Experience and the Impact of Ideas: Paul Lazarsfeld and Mass Communication Research*, COMMUNICATION 185 (1987).

[69] M. Powell and S. Phillips, *The New Box of Tricks*, DESIGN, December 1988, at 34.

[70] Mark Lewyn, Lois Therrien, Gary McWilliams and Neil Gross, *supra* note 47, at 109.

[71] Lawrence E. Tannas,Jr., *supra*, note 45, at 32.

[72] David Elrich, *The Big Picture*, VIDEO REVIEW, February/March, 1993, at 30.

[73] B. Fox, *Is Television of the Future Already Obsolete?* NEW SCIENTIST, Mar. 9, 1991, at 21.

[74] Hans Fantel, *Television Sets Shape Up for Movies*, N.Y. TIMES, Sept. 13, 1992, at H26.

[75] David Elrich, *supra* note 72, at 32.

[76] Lawrence E. Tannas, Jr., *supra* note 72, at 32.

[77] R. M. Wolfe, *A New HDTV System for Transmitting Film to Theatres by Satellite*, *in* THE NEW TV: A COMPREHENSIVE SURVEY OF HIGH DEFINITION TELEVISION 71-77 (L. CasaBianca ed., 1992).

[78] Hans Fantel, *A Hot Ticket: Home Theatres*, N.Y. TIMES, Dec. 6, 1992, at H16..

[79] Peter W. Mitchell, *US: Peter W. Mitchell*, STEREOPHILE, February 1993, at 73, 75.

[80] James Lull, *The Social Uses Of Television*, HUMAN COMMUNICATION, Fall 1980, at 203.

[81] Howard Blumenthal, *Television's New Resolutions*, AMERICAN FILM, March 1990, at 72.

[82] W. J. McGuire, *The Myth of Massive Media Impact: Savagings and Salvagings*, COMMUNICATION AND BEHAVIOR,Spring 1986, at 223.

[83] Color television was appealing to advertisers because it was the first mass medium to offer reliable color advertising to large audiences. When color television became generally available, most newspapers then did not offer color advertisements and magazines had narrower audiences than did television. Clifford, *supra* note 3, at 5.

[84] J. Gorzelany, *The Next Great Frontier*, CONSUMERS REPORTS, November 1992, at 30.

[85] C. Carbonara & M. Korpi, *HDTV and Film: The issues*, AMERICAN CINEMATOGRAPHER, August 1991, at 60.

[86] J. Flint, *Shooting With the Future in Mind*, BROADCASTING, Oct. 5, 1992, at 42.

[87] The entire process of HDTV market forecasting is problematic because of the assumption that the data are predictive. This problem is confounded by the fact that the data are removed from one context (e.g., color television or VCRs) and applied in a predictive manner to another (HDTV).

[88] Nolan, *supra* note 44, at 35.

[89] *Id.*.

[90] *Id.*

[91] *See* generally, High Definition Television: Hearing Before the Research and Development Comm. and the Investigations Comm. of the Comm. on Armed Services, 101st Cong., *See* also, Nolan *supra* note 44, at 36.

[92] Big Picture, *supra* note 33, at 6.

[93] Markey hearings, *supra* note 54, at 348 (statement of Richard C. Wiley, chair of Federal Communication Commission Advisory Comm. on Advanced Television Service, and attached Interim Report).

[94] The election of Bill Clinton as president may portend even greater governmental interest in high-definition television. Not insignificantly, Vice President Al Gore promoted telecommunication technologies, including HDTV, while he chaired the Subcommittee on Science, Technology and Space of the Senate's Commerce, Science and Transportation Committee.

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FIGHT FOR THE FUTURE:
Congress, the Brooks Bill and the Baby Bells

Presentation paper:
Association for Education in Journalism and Mass Communications
Communications Technology & Policy Interest Group
Kansas City, Missouri
August 1993

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FIGHT FOR THE FUTURE: Congress, the Brooks Bill and the Baby Bells

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ABSTRACT: 75 words

Since 1991, the fight over regional phone company entry into the information services business has moved from the courts to Congress, becoming "a battle between the very rich and the very wealthy." Lobbying and maneuvering over a bill introduced by House Judiciary Committee Chairman Jack Brooks made strange bedfellows of such diverse interests as the American Newspaper Publishers Association and AT&T. The outcome may lie in politics as usual.

FIGHT FOR THE FUTURE: Congress, the Brooks Bill and the Baby Bells

ABSTRACT: 150 words

Since 1991, the fight over regional phone company entry into the information services business has moved from the courts to Congress, becoming "a battle between the very rich and the very wealthy." The lobbying and maneuvering over a controversial bill introduced by House Judiciary Committee Chairman Jack Brooks, intended to impose restrictions on Baby Bells entering the field, made strange bedfellows of such diverse interests as the American Newspaper Publishers Association and AT&T. Its opponents included not just the Baby Bells, but those most interested in regulating them. Both sides, not surprisingly, staked their claims on the moral high ground of consumer interest. The fight is far from over, though recent developments may have changed the game. In the end, though, the key question is likely to be: Who gets control over which slices of what promises to be a very lucrative pie?

THE PRELIMINARIES

It took nine years, hundreds of corporate lawyers and many millions of dollars. But in 1991, the nation's seven regional phone companies -- the giant "Baby Bells" spawned by the breakup of American Telephone & Telegraph Co. in the early 1980s -- finally got a court to call things their way.

Back in 1982, U.S. District Court Judge Harold H. Greene had ended an on-again, off-again antitrust battle that had begun more than 30 years before. He ordered AT&T, then the world's largest monopoly, to split itself up.[1] Judge Greene's momentous ruling included a ban that prevented Ma Bell -- as well as its progeny, who he felt inherited not only AT&T's switches and wires but its strong incentive for anticompetitive behavior -- from providing "information services," including electronic publishing and other enhanced uses of telecommunications.[2]

The decision never sat well with the 22 regional phone companies, later merged into seven enormous conglomerates, which it created. And as time went on, their discomfort grew. In fact, the Baby Bells quickly came to feel their future as a centerpiece of the Information Age was on the line. They filed a barrage of legal appeals; Judge Greene gave them some freedom to store and forward electronic data, but held firm on the broader ban against the generation of information. They tried to change hearts and minds in the Justice Department, which had instigated the AT&T antitrust procedure; Justice came around rather easily, but Judge

Greene did not. They lobbied Congress and the FCC; they made many friends in high places, but Judge Greene was not among them.

At last, however, they hit on a tactic that worked. The U.S. Court of Appeals for the D.C. Circuit, ruling on yet another appeal by the phone companies, found a loophole in Judge Greene's latest judgment, which had reiterated the continuing need for a ban to protect current and potential competitors. The appellate court decided he had applied an improper standard in considering whether the phone companies should be let into the information services field. Even though Judge Greene had found no change whatsoever in their potential for anticompetitive behavior, the district court judge could not keep the phone companies out of the business unless he could prove that their entry would be absolutely certain to lessen competition.[3]

With great reluctance, Judge Greene admitted he could not. In July 1991, he bowed to the directions from the higher court and, despite his belief that "it would be difficult to conceive of a step that would be less in the public interest,"[4] lifted the ban. Three months later, the U.S. Supreme Court turned down the last related motion, a request for a stay filed by the American Newspaper Publishers Association (ANPA). The Baby Bells were, apparently, free to provide information services.

All seven Baby Bells have scrambled in the last two years to get new products off the drawing board and out to consumers (thus, presumably, protecting them under a "grandfather" consideration even if the rules change again). They don't have anything too breath-taking to show for it. "We're going as fast as we can," one Bell Atlantic executive said almost a year after the ruling, "but this effort has required some regrouping."[5] In 1992, Ameritech came up with an enhanced facsimile service, which provides electronic mailboxes for storing and managing fax messages. Nynex entered a joint venture with Dow Jones to deliver information over phone lines in New York (with Dow Jones providing the content);[6] BellSouth hooked up with Dow Jones to serve cellular phone customers in Los Angeles. Pacific Telesis Group went with customized reports, delivered daily to subscribers to its home voice-mail answering service.[7] A few other relatively low-risk, low-profile projects sprouted up around the country in the year following the court ruling. In the meantime, the Baby Bells also pushed ahead with moves toward the cable industry, with "video dialtone" an especially hot prospect.

But the Bells, knowing their freedom could prove short-lived, spent time, effort and money on another front. For while the battleground over information services had changed, the fight was far from over. It simply shifted from the judicial forum to the legislative one. In doing so, it became, as one key figure said, "a battle between the very rich and the very wealthy,"[8] with newspaper publishers, some consumer groups and even AT&T lined up against the regional phone companies. Legal maneuvering and private pressure tactics gave way to good old-fashioned lobbying, plenty of high-falutin' rhetoric and not a little mud-slinging.

THE EARLY ROUNDS

In the 1991 congressional session, a variety of bills intended to curb the regional companies or to specify just what lines of business they could be involved in were kicked around. In June, the Senate had passed a bill sponsored by Sen. Ernest Hollings (D-S.C.), chairman of the Commerce, Science and Transportation Committee, to allow the companies to manufacture phone equipment, another activity banned under the 1982 decree. But a House effort to take up the issue bogged down. Rep. Edward Markey (D-Mass.) floated several compromise bills to address manufacturing, information services and long-distance services in a single package, but found little support.[9]

Rep. Jim Cooper (D-Tenn.) introduced a stronger and more focused measure, setting up conditions to be met before a phone company would be allowed to provide information services over its lines. His H.R. 3515 was endorsed by a host of newspaper publishing interests, including the ANPA; the National Newspaper Association, representing weeklies and small dailies; the Inland Press Association, representing about 450 largely independent papers in the Midwest; and the Southern Newspaper Publishers Association, representing a similiar number of mainly Southeastern papers.[10] But it stalled in the House, with four dozen co-sponsors and no serious negotiations over it.[11]

Still, notice had been served that the matter was far from settled, and a whole lot of people paid attention. On February

19, 1992, the hearing room of the Rayburn House Office Building overflowed with lobbyists and executives on hand for a Judiciary Committee hearing that was the "opening gambit in a multisided, multimillion-dollar game with multibillion-dollar stakes -- the most costly lobbying fight Washington has seen in years."[12] Among the most notable players choosing sides on the question of whether Congress should allow the Baby Bells into the information services ballgame were:

- * Rep. Jack Brooks (D-Texas), powerful chairman of the House Judiciary Committee, an old-line populist with a deep mistrust of monopoly power in general and of "the most integrated and pervasive monopoly to develop on American soil" in particular.[13]
- * Rep. John Dingell (D-Mich.), equally powerful chairman of the House Energy and Commerce Committee. Dingell had been doing a slow burn for a decade over Judge Greene's use of the 1982 AT&T consent decree and subsequent rulings to keep telecommunications industry control in his hands -- and out of the hands of the regulators, over whom Dingell rides herd as head of the FCC's oversight committee.[14]
- * ANPA President Cathleen Black, former publisher of USA Today, described as "a rookie without a playbook" -- albeit an engaging and forceful, if not universally well-liked, one who said her industry was in "the fight of our lives."[15]

* AT&T Chairman Robert Allen, who urged Congress to codify the restraints on Ma Bell's monopolistic children and complained about a Justice Department that had repudiated the arguments it once used to smash his own company.[16]

Then there were the lobbyists and the lawyers, legions of them both for the operating companies and for what became known as the Unity Coalition, a group of more than 1,300 companies, trade associations and other organizations (many of them strange bedfellows indeed) calling for legislation to regulate the Bells.[17] In terms of dollars alone, it was hardly a fair fight. Between 1987 and 1991, the Political Action Committees (PACs) of the seven Bells and their subsidiaries spent more than $8 million on campaign contributions and other political activities, according to official records -- and the 1992 election year promised to be a particularly lucrative one. The Communications Workers of America, representing the Bells' blue-collar contingent, kicked in another $5 million in PAC money during the period. Dingell received $56,380 from Bell PACs between 1987 and 1991; Brooks pocketed $26,500.[18] Both men handily won re-election last fall.

The ANPA has no PAC, which many observers saw as a distinct disadvantage. Nor did it enjoy unqualified support from the people it purportedly was representing; for instance, at least one journalist warned that "newspapers cannot expect to hold back the tide, keeping the telephone companies out of their business," and, while they should maintain professional standards and work to keep the game fair, they should not blindly enlist in a battle against the Bells.[19] Still, as a lobbyist allied with the publishers pointed out, "The best thing they have going for them is, they buy their ink by the barrel."[20] In an election year, control over home-town coverage of a congressman's re-election campaign was not a bad card to have in the hole.

Newspapers publishers, of course, did not publicly play that card. Their approach was to depict the Bells as a seven-headed megamonster that would quickly devour all in its path. Letting the phone companies into the information services market would "drown out a rich mix of voices" already providing such services, according to the ANPA's Black. "If the Bells receive unfettered entry into their own markets, without appropriate antitrust safeguards, smaller information providers will not survive the onslaught."[21] Her opinion echoed Judge Greene's repeatedly stated conviction that a diversity of voices would be stifled by the phone companies' likely anticompetitive activity. A number of consumer groups agreed, believing an information monopoly in the hands of giant technology conglomerates would be bad for the American public.

But the Bells also staked a claim to the high road. They said newspapers' talk about diversity was self-serving, when publishers' real concern is the threat to what is now a virtual monopoly on daily classified and display advertising. The phone companies said freeing them to enter the information services market would enable them to wire the nation for fiber optics, giving them the ability to move large quantities of high-speed data, audio and video. They rallied the support of educators, organizations for the disabled and others who believe new, improved services would bring important benefits.[22]

The war was not waged solely in the lofty realm of the public interest, though. The Bells in particular have incredible amounts of lobbying money and expertise at their disposal. Indeed, one result of breaking up AT&T seems to have been to multiply the ranks of the phone companies' in-house lobbying force--and weekly strategy meetings ensure they present a united front. Just one result: "attack ads," targeting Cooper's bill, that ran in print and on radio in the home districts of its early co-sponsors. Although newspaper lobbyists claim the ads backfired by exposing the Bells as bullies, the campaign apparently did its job. Prospective new co-sponsors were scared away, and by the spring of 1992, the ANPA-backed bill was pretty much dead.[23]

THE MAIN EVENT

So things stood in May 1992, when Jack Brooks introduced the Antitrust Reform Act of 1992 (H.R. 5096). Brooks' bill would allow a phased-in entry of the Baby Bells into the information services, manufacturing and long-distance businesses -- provided they pass a uniform entry test, administered by the attorney general and, ultimately, the federal courts. The regional companies also would be subject to antitrust laws; for example, they could not discriminate against competitors or subsidize their information services business with profits from their local phone services. If a federal court found they had broken the rules, criminal penalties could apply.[24]

"My legislation recognizes two needs: the need to ensure that robust competition remains the order of the day and the need to ensure that innovation is not sacrificed in the process. Listening to the great din of voices that were heard in the Judiciary Committee's recent set of hearings, one might think these goals were somehow mutually exclusive. They are not, and it is time to move away from such simplistic slogan-making from all sides," said Brooks.[25] "I have decided to take the [Baby Bells] at their word. They have testifed repeatedly that they want to provide special services to the handicapped and the socially disadvantaged. My legislation will give them special consideration to make good on their laudable promises -- as the whole world watches."[26]

The House Judiciary Committee chairman was not always so judicious in his remarks. "I, for one, will not condone an industry born in 19th-century monopoly to be reborn in a sleeker, 21st-century version," he told the ANPA's presstime.[27] And to a reporter for Editor & Publisher, a more broad-based publication serving the newspaper industry, he said his goal was "leaving behind the tattered remains of piecemeal competition policy."[28]

Spokesmen for the phone companies were not appreciative of his efforts. An Ameritech vice president labeled the Brooks bill "anti-competitive, anti-consumer legislation masquerading as populism." A Bell Atlantic vice chairman said: "A more craven sacrifice of public to private interests couldn't be imagined." And Ron Stowe, a Washington-based vice president of Pacific Telesis Group, called the bill "nothing but a flat prohibition in disguise. It is a slap in the face to American consumers." The measure, he said, "would damage the economy, reduce research and development, and eliminate new American jobs, and for what good reason? None, except to protect a handful of backward-looking newspaper publishers and other special interests."[29]

Needless to say, the publishers disagreed. They scoffed at a Baby-Bell commissioned study, released in June 1992, that claimed if the phone companies were allowed to remain in the information services business, they would, by 2001, have led an economic surge of 1.46 million new jobs and boosted the U.S. gross domestic product by $110 billion. Unity Coalition members said the industry already has generated millions of new jobs -- jobs that could be threatened by phone-company entry into the field. The Brooks bill, they said, wouldn't keep the Bells out, but it would provide adequate safeguards and prevent the giant companies from gaining an unfair competitive edge.[30]

Other voices were raised in opposition to the proposed legislation. In a letter to Brooks and Rep. Hamilton Fish Jr. (R-N.Y.), the ranking minority member of the Judiciary Committee, Commerce Secretary Barbara Franklin said she opposed the bill because it would impose new constraints rather than eliminate current restrictions that are "no longer necessary to protect competition and are contrary to the public interest." Fish, for his part, said the bill went too far beyond the antitrust laws and terms of the consent decree. The measure is "about protecting the existing marketplace situation," he said. "That is not what the federal antitrust laws are all about."[31]

But the more savvy Capitol Hill money was on another facet of the matter altogether. Forget jobs or competitive activities or even the less altruistic motives of capitalism: It saw the looming battle as one for legislative turf, pure and simple. On one side was Jack Brooks, seeking to gain control of the emerging information technologies through antitrust measures, under the aegis of his House Judiciary Committee. On the other was his old fishing buddy John Dingell, just as crusty and mercurial and just as eager to control the burgeoning field through his position as chairman of the House Energy and Commerce Committee.[32] Moreover, Dingell has been no big friend of newspapers lately; he has been criticized in his local press for his "sometimes hardball methods," and there has been gossip about his wife, Deborah, a General Motors executive and descendant of the company's founder. "If you ask Dingell, 'Do you want to help the newspapers?' the answer is 'Screw 'em,'" explained one Bell lobbyist.[33]

In early July 1992, the House Judiciary Committee passed a slightly amended version of Brooks' bill 24-9. Under the measure, the Justice Department would have to certify that the phone companies have "no substantial possibility" of using their monopoly power to impede competition. And even then, a favorable decision would not automatically open the doors. The Baby Bells would be kept out until court challenges from competitors were resolved, a process that could take years.[34] Overall, the measure seemed to have captured bipartisan support and the publishers' contingent was pleased.

But not the Baby Bells, who were incensed anew. "The bill would take away the impetus to make information services available to residential customers and small businesses," said Pacific Telesis' Stowe. It "issues an open invitation for competitors to file a plethora of lawsuits merely for competitive reasons."[35]

A more favorable change to the original bill, from the Bells' standpoint, was the addition of an amendment proposed by top Judiciary Committee Republican Fish. Fish's amendment stripped the bill of provisions that would have forced the Bells to wait years before applying to enter restricted lines of business.[36]

Once safely past the judiciary panel, the bill's advocates turned their attentions to getting it onto the House floor and, ultimately, passed there and in Congress. But several potential roadblocks loomed. Dingell asked that his Energy and Commerce Committee be allowed to consider the bill first. Markey (a member of Dingell's committee) circulated a draft telecommunications bill of his own. Rep. W.J. "Billy" Tauzin (D-La.) introduced a bill dealing solely with information services. Both the Markey and Tauzin proposals contained fewer restrictions than the Brooks bill;[37] the Tauzin bill was supported by the phone companies. Taken as a whole, at least one observer saw the proposals as constituting "the most significant legislative push to change United States telecommunications policy since the 1934 Communications Act," adding that the outcome of battles in Congress "could determine the future of the U.S. telecommunications industry."[38]

But by last August, the chances of that future becoming clearer in 1992 had dimmed significantly. The House leadership denied Dingell's request to have the Brooks bill referred to his committee. And it scheduled the measure to come to the House floor no sooner than September 25 -- a Friday shortly before the 1992 session was due to end, so members of Congress could go home and campaign for re-election. That date left little time for debate on a broad and complex topic sure to set off a very public battle between two powerful committees and their chairmen.[39]

Yet the House leadership sent strong signals the battle would be joined in the 1993 session, if not in 1992. So not long after the decision was announced, Brooks fired his next round of ammo: a 205-page report criticizing the Bells and lauding his bill as a way to "codify a mechanism" to encourage their entry into the information services field "as soon as antitrust considerations permit." There has been, he said, a "pattern of unremitting effort by the Bell System to undermine public and congressional support for sustained antitrust enforcement through a litany of canards about its distinctive effects on the telecommunications industry and about the multiplicity of societal 'benefits' to be derived from unleashing the Bell monopoly to serve its self-appointed role as the handmaiden of technological progress." His bill, he added, embodies the resolve that "the government not lose its nerve once again and not allow an industry born in monopoly to be reborn in monopoly."[40]

Brooks' report gave a nod toward Dingell's camp, recognizing the role of federal and state regulators, but criticized "a pattern of reverting to oblivious reliance on the regulatory process in lieu of sustained antitrust enforcement." He challenged claims his bill would cost jobs and suppress free speech; he cited its broad-based support, including an about-face by the Communications Workers of America, which previously had aligned itself with the Baby Bells. He even threw in the First Amendment, arguing that freedom of speech and press "does not include the right to monopolize a medium of expression."[41] Dissenters, including Fish, weighed in with their reply; they said an appropriate response to concerns about court decisions on information services "does not lie in the erection of a new, sweeping and unnecessarily restrictive federal law" but in ensuring there are "effective regulatory safeguards in place . . . backed up by the safety net of statutory enforcement and damage remedies."[42]

Nor did the fact of dim prospects for passage--or even consideration--of the Brooks bill in 1992 stop the street-fighting. In the fall, the phone companies unleashed a barrage of newspaper ads targeting Brooks. California readers were told that "If the Congressman from Texas gets his way, California will be out 179,000 new jobs." In *Roll Call*, a daily paper with avid readership on the Hill, ads declared: "It's no secret that the newspaper conglomerates manipulate their editorial pages to fatten their profits." The other side ran *Roll Call* ads accusing the Bells of "talking out of both sides of their mouth" by promising more jobs, when Bell entry into the information services area actually would mean job losses because of the phone companies' monopolistic practices.[43]

NO FINAL BELL

On October 1, the House Rules Committee heard two hours of testimony on whether it should allow H.R. 5096 onto the House floor. By then, about 200 amendments had been added to Brooks' bill, many by members of the Telecommunications and Finance Subcommitee; Dingell, in the meantime, had fired off a letter to the Rules Committee calling the measure "one-sided, to the detriment of the Bell companies, their employees and their customers" and charging it was being brought up "in the middle of the campaign season when . . . the newspaper publishers have maximum leverage."[44]

Eight of the 13 Rules Committee members attended the hearing; only a few sat all the way through it. Brooks and his allies pushed for the measure for antitrust reasons (putting it under Judiciary Committee jurisdiction), saying it would protect ratepayers and ensure competition; Dingell and his friends said telecommunications should be guided by broad public interest principles, not just antitrust views.[45] Brooks said the submission of so many amendments, 90 percent of them "not even germane" to the bill, was a tactic to "intimidate" the Rules Committee so it wouldn't look at the legislation; Dingell said that with so little time left, the House should not force a floor vote on a such a wide-ranging bill, which would compel an election-year choice between the newspapers and the Bells.[46]

Essentially, then, the Rules Committee sought an answer not to whether the bill should be introduced, but why it should be introduced immediately. The Brooks side said quick action was neeeded to protect companies that could be put out of business by anticompetitive activities by the time Congress got around to acting; one ally said even House passage of the bill would send a message to the financial community that Congress is serious about protecting competitors, thus giving them easier access to loans. Dingell's position was that hasty action was unnecessary. Markey, who promised comprehensive telecommunications legislation would be brought forward in 1993, said the mere fact that the Rules Committee had taken up the bill sent the necessary signal, as did public statements of intentions to legislate next year.[47] (The

Massachusetts Democrat also was easily re-elected in November.)

Not surprisingly, the Rules panel reached no decision that day. Early the next week, Congress adjourned without action on the Brooks bill.

IS THE FIGHT ON HOLD?

Soon after Bill Clinton's inauguration in January, the Center for Strategic and International Studies sponsored a conference to study the likely effects on communications policy of an administration that has voiced strong support for high-tech solutions to many of the nation's problems. Some of the rhetoric that emerged sounded familiar; the ANPA's Black, for instance, said that if the new Congress did not move quickly to pass the Brooks bill, "it is all too clear that investment, innovation and jobs could be stunted by a monopolistic venture."[48]

But there were signs of change. For one thing, John Dingell and Jack Brooks were said to be speaking to each other again, seeking an "understanding about their committees' correct jurisdictional lines" -- divvying up the antitrust aspects of the Bells' entry into the field and the regulations involved once they're in. Their apparent rapprochement was seen as "small but potentially significant steps toward looking at ways to fashion a cooperative approach to the contentious issue."[49]

Yet as of June, Brooks still had not resurrected his bill and there was no indication he was about to do so anytime soon. Some lack of activity may have been attributable to delays in confirmation of key government appointees, such as the new head of the National Telecommunications and Information Administration and the assistant attorney general heading Justice's antitrust division.[50] But startling developments have provided other reasons to hold off on any action.

Suddenly, peace seems to be breaking out between those erstwhile bitter enemies, the newspaper publishers and the telephone company executives. A senior vice president at the Newspaper Association of America estimated in June that as many as 300 meetings had been held with the seven Baby Bells. They apparently have resulted in deals ranging from an agreement with New Jersey Bell to set up an electronic publishing subsidiary[51] to indications that Cox Enterprises and BellSouth Corp. are on the verge of a joint venture to deliver Yellow Pages and classified ads electronically. Cox, which owns the Atlanta newspapers and other media holdings, had been among the most vocal opponents of phone company attempts to enter the information field.[52] Early this summer, reports circulated that Time-Warner, Tele-Communications Inc. and Microsoft Corp. -- three giants of the media, cable and software industries -- were considering an arrangement to set crucial software standards for interactive television.[53]

Have the media companies decided to join 'em rather than try to 'beat em? Apparently so. Has too much bad blood been spilled for the tentative new deals to work? Apparently not. "Where there is an opportunity, memories can often be short," F. Duane Ackerman, president and CEO of BellSouth, remarked in June. "Newspapers and telecommunication companies, those two players, were very suspicious, thinking somebody was going to get all the market. As time goes on, we will see some of those suspicions fade to the background with the realization it's going to take both parties working together."[54]

Whether "the very rich and the very wealthy" march together or separately toward the communications future will have major implications for the route taken, not just the speed of travel and the amount of vitriol expended along the way. Authors such as John Wicklein (Electronic Nightmare, The Viking Press, 1981) have argued it is crucial that those who control the delivery method do not also control the content delivered. If that reasoning is correct, joint commercial ventures between media and telecommunications giants are bound to further concentrate power and reinforce the potential for and, inevitably, the fact of its abuse -- despite two-way communication's promise as a medium open to all who wish to be heard.

And what of the ostensible heart of the argument, in the courts and in Congress over the past 10 years and more: Will joint activities encourage competition or stifle it? A whole lot of companies seem suddenly to be jumping in the pool. But while the water may be getting crowded, it's not filling up with little fish -- it's just that the big fish now include those from media concerns. Certainly, recent developments do not indicate progress toward a common carrier arrangement, endorsed by such scholars as Wicklein and Ithiel de Sola Pool (Technologies of Freedom, Belknap Press, 1983), and its presumed provision of access to a more diverse range of information providers, urged by jurists such as Judge Greene as being in the best interests of the American consumer.

Furthermore, the entry of newspaper companies such as Cox (and many others are getting their feet wet as well) raises a host of regulatory issues quite different from those that concerned Brooks and Dingell when the fight was over the telephone companies alone. American newspapers, of course, have always fiercely defended their constitutional right to publish what they choose, free of government control. What kind of policy emerges when one industry, with a fundamental interest in freedom from regulation, goes into business with another industry that has been regulated in the public interest? The various media that are now converging have been organized and treated differently under the law; observers fear that public interest regulation could begin to extend over the print media as they increasingly use electronic channels to convey information.[55]

We can hope the answer to the questions raised by the ongoing evolution of the new information technologies will lie in a policy that aims much higher than those thus far proposed in Washington, that honestly balances conflicting interests to nurture the welfare of society.[56]

It's time for the next round.

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(14) Ibid., 58.

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The Diffusion of Information on Assistive Technology Internationally to People With Disabilities

Abstract

Michael R. Smith
Lycoming College
August 1993
AEJMC Convention
Presentation to Interest Group on the Status of Persons With Disabilities

The theory of diffusion of innovation is used in this report to explain communication across groups on a macro level including the transnational transmission of data. This theory helps to explain, in part, the adoption of the telephone caused by consumer demand. Despite technological developments that could be beneficial to groups such as people with disabilities, the adoption of some technologies is slowest among these groups. The predominant problem is access to relevant information from credible sources. The report examines a number of examples, both domestic and foreign, of telecommunication development for people with disabilities. The report concludes with a list of sources that can help a person with a disability learn about telecommunication developments and other technological innovations.

The Diffusion of information on Assistive Technology Internationally to People With Disabilities

Michael R. Smith
Lycoming College

August 11, 1993
AEJMC Convention
Presentation to Interest Group on the Status of Persons With Disabilities

Introduction

When Alexander Graham Bell pioneered the telephone, he had as his goal a device to help his hearing-impaired wife communicate better with people in the same house (Minow, 1991). With this anecdote as background, telecommunications can be said to have a historic connection in helping people with disabilities. Since Bell's invention, a tele-volution has transformed communications. Emerging technology means that information delivery systems that capitalize on telecommunications are converging. In 1991 USA Today's Thomas Curley told an audience at the Sixteenth Annual Ruhl Lecture that the Information Age has to do with delivery systems, not content changes (1991). "Around the corner are direct broadcast satellites, high-definition television, and enhanced-definition television, in which a computer or computer-like device is hooked to a television allowing the user to talk back or to play 'Wheel of Fortune' along with Vanna" (18).

In this report convergence is the merging of telephone, data transmission and computer technology to form what Harvard's Anthony Oettinger is calling compunications, the combination of communications and computing (Pavlik and Dennis, 1993, p. 2). Convergence means more choices (Pavlik and Dennis, 1993), which provides more opportunity to access information but adds to the expense of retrieval. In telecommunications, the distinction between voice and data is blurring (Department of Commerce, 1993). While businesses are scruntinizing technological advances for their economic benefits, advocates for people with disabilties see related advantages of technology such as Integrated Services Digital Network, a cornucopia of "feature-rich telecommunicaions and information processing" (Frieden, 1992, p. 7). Were it to be available, ISDN could offer telephone users--people with and without disabilities--more access to information.

Along with computers and assistive technology, a melange of international access never before imagined is available yet those who may profit most from these developments aren't necessarily inclined to receive it any sooner than anyone else. "Many disabled people do not know about new technologies that can help them, where to get information about special equipment, or how to pay for it," writes researcher Meng (1990, p. 187). This report will examine telecommunications and assistive devices associated with it and briefly describe the diffusion of information in the United States and other markets. Since assistive technology, which may involve computers, often is linked to telecommunications, this report will examine the synergy of the pair.

Diffusion of Innovation

The theory of diffusion of innovation helps explains the communication across groups on a macro level including the transnational transmission of data. This theory is used, in part, to help explain the adoption of the telephone caused by consumer demand (Fischer, 1992). Diffusion and adoption also are part of one explanation of new telecommunicaiton service (Bonanzinga et al, 1991). Developed by James Coleman in the 1960s, this theory originally tried to explain the adoption rate of antibiotic drugs by medical doctors (Jowett and O'Donnell, 1992). Coleman learned that peer evaluations convinced physicians of a drug's benefits more than scientific evaluations. More than two decades ago, Rogers (1962) noted that Americans gravitate to science and technology, yet "a considerable time lag is required before an innovation reaches wide acceptance." Diffusion theory suggests that information may be available for years before those who can benefit from it avail themselves to it. The Technology-Related Assistance for Individuals With Disabilities Act of 1988 (Public Law 100-407) highlighted this problem in the United States: "Many individuals with disabilities do not have access to information on assistive technology devices and assistive technology services that such individuals need to function in society commensurate with their abilities."

According to the theory of diffusion of innovation, innovations may be symbolic or technological (Assael, 1987, p. 448). Symbolic innovation conveys new social meaning such as a slight variation on an existing product that gives the perception of a new meaning--for instance, skin products for men (Assael, 1987, p. 448). Many facets of disability are loaded with symbolic meaning, from notions of dependency to a kind of able-bodied imperialism. In this context of this report, the symbolic qualities of the technological frontier will be ignored; instead the emphasis will be on technological advancements that pose as much of a benefit for people without disabilities as well as people with disabilities. For people with disabilities, technical innovations are the more common type of innovation and may be continuous--extensions of existing products--or discontinuous--"a major technological advance involving the establishment of a new product and new behavior patterns" (Assael, 1987, p. 448). Telecommunications blurs the dichotomy of these definitions by placing some advancements in the purely continuous innovation, such as facsimile machines, to genuinely new products, such as personal-communications services that contain technical advantages over cellular communication systems.

Assistive technology are devices used by people with disabilities to assist them in performing an activity that a person without a disability can perform without the device. Devices can include a specially-adapted lift that helps a farmer into his tractor or computers, which may be to the people with disabilities what the printing press was to the Reformers.

Technology offers three benefits: "(a) the facilitation and automation of therapeutic regimen and educational activities; (b) the provision, restoration, or extension of a person's physical abilities; and (c) the provision of opportunities for greater participation in the mainstream of society" (Parette, 1991, p. 165). Parette notes that the goal in using technology is "optimum functioning" (Parette, 1991, p. 165). The Technology-Related Assistance for Individuals with Disabilities Act of 1988 defines technology as "... any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities (29 U.S.C. 2202, Sect. 3 (1)). With these broad definitions in mind, Parette recognizes the difficulty of widespread diffusion of innovation, noting that "there are few people who could possibly be knowledgeable of the diversity of technologies across the many areas of human functioning" (Parette, 1991, p. 167). In short, the abundance of information is another hurdle in the diffusion of information on innovations for people with disabilities.

Clinical definition vs. performance definition

A disability as defined by federal statute includes speech, hearing, visual and orthopedic impairments, cerebral palsy, epilepsy, muscular dystrophy, multiple sclerosis, cancer, diabetes, heart disease, mental retardation, emotional illness, and specific learning disabilities such as perceptual handicaps, dyslexia, minimal brain dysfunction and development aphasia. A person is considered to be disabled if his impairment is severe enough to substantially limit one or more of the major life functions. According to the 1990

Census, approximately 34 million people in the United States possess a disability (World Institute on Disability, 1992).

Aside from the clinical definition, a disability can be understood in terms of performance of a life activity such as seeing or communicating (World Institute on Disability, 1992). For diffusion of assistive technology to be widespread, a paradigm shift must occur from the past model that perceives people with disabilities as defective--an inability to see or speak--to the technology/ecology paradigm which calls for a fit between a person's goals and his or her capabilities and his or her environment (Daniels, 1990). In this paradigm, disability is redefined not in terms of a person's defect but "as a lack of fit between a person's goals, his or her capacities, and the resources in the environment" (Meng, 1990, p. 181). A bus, a piece of technology, that breaks down is disabled--not the passengers who may include people with or without disabilities. The difference is the placement of the emphasis.

Attempts are underway to emphasize fixing the environment but people with disabilities, as a group, may be unaware of the array of technology available to improve environments (Cain and Tabler, 1987; Meng, 1990) and many people with disabilities are underserved by information providers. The Technology-Related Assistance Act (PL 100-407) defines as underserved "any group of individuals who, because of disability, place of residence, geographic location, age, race, sex, or socioeconomic status, have not historically sought, been eligible for, or received technology-related assistance." Furthermore, discrimination, financial-problems and a scarcity of counselors make it difficult for resources and information to get to these groups (Massachusetts Development Disabilities Council, 1990).

A lack of diffusion

According to Technology Information Project of Seaside Educations Associates of Lincoln Center, Massachusetts, a survey of 2,136 consumers in Arkansas (VanBiervliet and Parette, 1989) indicated that more than half the respondents reported that they felt that they needed more information regarding assistive devices. In addition, the state of Massachusetts found in its survey that more than 75% of the people with disabilities said that they needed more information on assistive devices; a majority also noted that they are unsatisfied with the information available on assistive technology devices and services (Massachusetts Development Disabilities Council, 1990). Parette (1991) and Blackstone (1989) also found that consumers lack information on assistive technology. Information is available but the diffusion rate is low among people with disabilities.

Theoretical Framework

Information is available yet the people who need it often remain ignorant. Why? Rogers notes four elements in the diffusion of innovations model: "(1) the innovation (2) its communication from one individual to another (3) in a social system (4) over time" (1983, 10). An innovation, described as an idea even if it includes technological innovation, is new if it is considered new by the person who encounters it (Rogers, 1983). Diffusion of innovation is the process of the spread of this new information. An idea as well as an object may be diffused. The diffusion is marked by social interaction about those who know about the innovation and those who don't but who learn about it. The social system is a heterogeneous community that shares some common problem (Rogers, 1983). Early adopters tend to be more interconnected in their social system suggesting that they might rely on other's influence in making decisions about an innovation (Strutton and Lumpkin, 1992).The adoption of the innovation is a continuum where some individuals in the community respond to the innovation and readily adopt it while others require prior acceptance by the majority. In some cases, the adoption is forced on unwilling recipients because of a group decision. Among the social dynamics that may lead to adoption or rejection of the innovation are the community's norms, accepted behavior that may follow a tradition, and modern behavior that encourages embracing innovations. A person who is considered an opinion leader will exert influence over others to help diffuse an idea leading to its acceptance (Rogers, 1983).

Ideas or innovations are introduced to a community from an outside source although it may be created within the social system. The process of adoption occurs at many levels but begins with the cognitive steps of: "awareness, interest, evaluation, trial and adoption" (Rogers, 1962, p. 17).

As a community, people with disabilities have an additional hurdle in this sequence: discrimination--although recent laws are encouraging. The Technology-Related Assistance Act and other federal laws barring discrimination are helping shift from the individual defect paradigm to fix-the-environment paradigm. Among the international efforts to correct the environment and promote diffusion of telecommunication and assistive technology innovations is the work of World Institute on Disability (WID).

World Institute on Disability and policy on telecommunications and assistive technology

The World Institute on Disability, a research, training and policy development center led by people with disabilities since 1983, is advocating drastic changes in telecommunications policy in the United States and overseas to help people with disabilities avoid social and physical isolation that results when communication is reduced or cut off (World Institute on Disability, 1992). WID works with other countries in training and in 1987 participated in the first Japan-USA conference on empowering people with disabilities.

In its 1992 "Laying the Foundation" policy evaluation, WID advocated that telecommunications expand on existing services. For widespread diffusion of the telecommunications innovations, industries, governments and organizations, as a matter of policy, must offer people with disabilities additional access in relay systems such as the text telephone or telecommunications display device that allows a person with a hearing or speech impairment to communicate to a third party with an operator as an intermediary (World Institute on Disability, 1992) .

In the United States, the Americans With Disability Act prohibits discrimination "on the basis of physical or mental disability in employment, transportation, access, public accommodations and telecommunications," writes Williams (1990, p. 1). He goes on to write that assistive technology "must play an increasingly integral part in helping to realize ADA and all of its promise" (1990, p. 1). Title IV of the ADA mandates that all states, under the authority of the Federal Communications Commission (FCC), establish relay services that allow telephone users to communicate with each other either by text, voice or through an operator (Brotman, 1991). This system requires telecommunications device for the deaf (TDD) or a computer for the system to work. In addition to the lack of privacy involved in using an intermediary, people with disabilities have little assurance that they can communicate with offices such as governments using this technology even if those offices say they have text telephones. For example, an untrained government worker may not recognize the sound of a text telephone call and hang up. Attempts are underway to correct these flaws (World Institute on Disability, 1992).

The macro picture

Hearing impairments and telecommunication

In the United States, the policy issues that impact on diffusion of telecommunication are varied. For instance, telecommunication services can't be reduced to one disability. Hearing impairments occur on a spectrum (Brotman, 1991). In addition, the notion of universal service must be expanded to include more than telephone coverage regardless of geographical location or degree of wealth, but the idea that everyone "must be served by current telecommunications technologies before new ones are required to be added to the local service rate base" (Brotman, 1991, p. 14). The telephone network of the future will, no doubt, incorporate infrastructure development that will include price caps, for instance, and create a climate where FCC oversight isn't necessary. "The current need for detailed regulations can and should recede once technological solutions such as hearing/speech pass-through and call multiplexing are in place" (Brotman, 1991, p. 14.) For now, some oversight is needed to encourage the expansion of telecommunication services for people with disabilities.

At present, however, specially-equipped telephones are tied to more affluent areas, creating disparity between the telecommunication haves and have-nots. Researchers John I. Gilderbloom and Mark Rosentaub examined the 1979 American Housing Survey, a review of the special housing needs of more than 50,000 United States citizens, and found African-American are three times more likely to need special telephones than whites, and renters are twice as likely to need special telephones than homeowners yet these populations, as a whole, don't have access to the special equipment (Gilderbloom, 1991). The notion of universal service says that the aggregate value of telephone communications is greater than the total amount that individual users in the market pay but that the value of the service increases when more people are connected (Brotman, 1991). Based on that theory, those who live in disenfranchised areas are being denied the right to participate in this good that can benefit everyone in a society.

Title IV supports the idea that states are in the best position to develop relay services and specially-equipped telephones that meet the needs of their communities (Brotman, 1991). Some of these issues are aggressively under study. The Bell Operating Companies authorized Bellcore to develop Telecommunications Network for the Deaf that will evaluate technology that may be useful to people with hearing impairments. Developments include operator-free calling using computer-prompting communication (Brotman, 1991). Already Bellcore has developed an Analog Display Services Interface telephone being test-marketed in 200 New Brunswick households by Northern Telecom (Interactive World, 1993). Users receive messages sent to the telephone display. Information messages include the weather, sports news and commercials from merchants. The telephone also allows a user to conduct banking with audio prompts that accompanies a menu of services, features that are designed to help making home banking less confusing (Interactive World, 1993).

A micro look

A disability not associated with hearing

While hearing impairments are an obvious disability under review in telecommunications, other disabilities are associated with overlapping technology. For instance, Dan Cooper, 57, of State College, Pa., takes advantage of assistive devices to adjust to a learning disability. His eagerness to experiment with the latest innovation qualifies him as an innovator, 2.5 percent of a population who are the first to try new ideas (Assael, 1987).

A businessman who left two successful careers to return to college, Cooper is surrounded by computers and gadgets. "I knew I had a problem but I wasn't diagnosed as having a learning disability until 1983," he said in an interview (Personal communication, June 21, 1992). "I didn't think I could write at all but computers have helped." Computers with writing software packages are helping many people with writing skills including Jay Brill, president of the National Network of Learning Disabled Adults, who said, "My dysgraphia--inability to write--prevents me from writing more than a few words at a time" (Meng, 1990, p. 187). Brill goes on to say that his computer has helped him concentrate on writing and not mistakes (Meng, 1990).

In addition to a computer, Cooper uses a modem and Prodigy on-line service, not for the news, but for the messaging capability--to communicate. He once used CompuServe, a nationwide electronic conference and information service, but prefers Prodigy Services Company, a joint venture between International Business Machines Corp. and Sears, Roebuck & Company, with about 500,000 members. Prodigy's communication features, its electronic bulletin board, appeal to Cooper.

Telecommunications, whether the ordinary telephone connection or on-line services, are helping people with disabilities internationally become connected to other communities making physical access irrelevant. This community may not be bounded by geography but it fulfills the description cited by Rogers that a community's members share norms. In the computer community, opinion leaders can still influence others to accept an innovation, just as neighbors might do in person talking over a backyard fence. On-line information retrieval is a way to obtain information from home or office, particularly useful for a person with a disability who finds it difficult to travel. Computer users can tap into databases from personal computers and conduct searches using keywords. The disadvantage to adopting this technology is the expense: a user must have a computer, communication software, a telephone modem and a budget to afford the cost of the on-line service, which usually includes a flat fee plus an hour rate.

Vu/Text, just one of the data-retrieval services, has grown from a four-newspaper databank in 1981 to the one of the largest U.S. newspaper databank offering information on companies, products and people. Most files are available within 24 to 48 hours of publications. The system now offers 72 U.S. daily newspapers. Another service is DataTimes in Oklahoma with a collection of more than 640 periodicals. CompuServe, American Online and GEnie and other information services have dedicated forums on disability issues where users can communicate with each other electronically (Meng, 1990, p. 187). These kind of databases are powerful tools for helping people with disabilities who can't travel easily to libraries stay informed.

In addition to on-line computer services, people with disabilities are facing a constellation of communication options from which to select. American Telephone & Telegraph Co. and Sprint Corp. are investing in cellular telephone technology and the FCC is poised to grant licenses for personal-communications services (PCS) (Potter, 1993). Newspapers publishers have applied for "pioneer preference" to experiment with PCS (Potter, 1993, p. 20). Cox Enterprises Inc. and The Washington Post Co. own cable television systems that could use PCS and portable telephones to transmit and receive signals in areas only a few hundred feet wide. This system will allow for lighter, smaller and less expensive handsets that will help people with and without disabilities communicate (Potter, 1993). This technology offers the potential for additional access for people with disabilities who want more ease in communication.

Despite these advances and the goal of universal service, major policy issues that impede diffusion of communication assistance confront people with disabilities. For instance, the turf conflict between the newspaper industry and the telephone companies may delay the diffusion of communication benefits for people with disabilities. With Judge Harold Greene's 1992 decision to allow the Regional Bell Operating Companies to offer information services, the tug-a-war for access between the newspaper industry and the telephone companies intensified. Services such as videotex and voice and electronic voice yellow pages, sources of information that could help connect people with disabilities to other communities, are underway, but the two industries are disputing the other's claim on leadership status (World Institute on Disability, 1992).

In addition, each communication service has its drawbacks. The on-line service that Cooper uses could be activated using voice synthesis system that allows a person with a vision problem speak text. Voice reading works well for text but future advances must address the reading of graphics to allow people with vision impairments gain access to this information through voice commands. For those with learning disabilities, limited access and repeat features may have to be modified to allow a caller using telecommunications prompts enough time to respond. Among technical improvements to the telephone hardware for people with hearing problems are text telephone access ports or keyboards, hearing aid compatible handsets, volume controls for handset and speakers, and the simultaneous use of visual information to supplement audio information (World Institute on Disability, 1992, p. 46). For vision problems, synthetic speech, large print, tactile markings and the use of audible information to supplement visual information will enhance telecommunications. The benefits of adding these features and others for movement problems, speech problems and cognitive processing problems will be of benefit to ordinary users as well as people with disabilities (World Institute on Disability, 1992).

Western Europe and telecommunication employment

Diffusion of innovations on an international scale are innovations with the greatest chance of acceptance. Recent policy changes to allow telecommunication deregulation are occurring simultaneously with expansion of services for people with disabilities. Telecommunication deregulation is sweeping Europe along with greater interest in value-added services such as credit card verification (Frieden 1992). Associated with this progress is the movement by some countries to make telecommunications truly universal service by engaging people with disabilities in some of the improvements. At least four Western European countries are adapting technology for people with disabilities who work in telecommunication (Scadden, 1990). In France, switchboard operations employ 1,400 visually impaired people, more than other industry in the country. Ironically, the very improvements that can help people with disabilities communicate more easily are threatening some of their jobs. Advances in French telecommunication may displace some of these workers with disabilities (Scadden, 1990). Automation is forcing the Austrian Institute for the Blind to train its vision-impaired telephone operators to become familiar with other office equipment (Scadden, 1990). In Denmark, blind people are trained to work in Danish customs office and speech and braille displays are available for their telecommunication equipment (Scadden, 1990).

Scandinavian

The Technology-Related Assistance for Persons with Disabilities Act of 1988 in the United States provided funding to diffuse information on technology. In Scandinavian countries, governments set policies with funding provisions to spread technology and information on technology (Perry, 1990). In Sweden, for example, the government provides assistive technology as part of its free health care program.

The Netherlands is introducing some competition in telecommunications (Frieden 1992) and its programs to introduce more technology to people with disabilities are improving. The Nordic Committee on Disability, with members from Sweden, Norway, Finland, Denmark and Iceland, shares information and promotes the distribution of computer-based technical aids between countries. According to Perry, "Each country has the option of adapting the ideas and the work of the committee. There are incentives for adopting the recommendations, mainly the reduction in duplication of effort in testing and development, saving on costs and time and encouraging more efficient use of resources (1990, p. 5).

United Kingdom

Like the United States, the United Kingdom is vigorously involved in deregulation and has introduced competition in the domestic satellite arena along with allowing resale of basic telephone services. Along with these deregulation policy innovations, Great Britain is making strides in providing technologies to people with disabilities. Its Department of Trade and Industry is working with its schools to provide personal computers that can be connected to modems for children who have difficulty speaking (Heiner, 1990, p. 8). In addition to preparing this next generation to take advantage of the benefits of telephone technology by improving speaking ability, the program is helping students learn. The United Kingdom provides low-cost software for students with disabilities as part of its education mission (Heiner, 1990, p. 8). Students with hearing impairments can practice making sentences using feedback programs; students with vision problems can write in large text and students with difficulty pressing keys can use headsticks or mouthsticks to compose sentences (Heiner, 1990, p. 8).

Organizations that diffuse information on innovations

In the United States, telephone companies, computer software and hardware manufacturers and others are making leaps in technological improvements that promise to help people without disabilities as well as people with disabilities; however, access to the information is difficult because of fragmentation of information sources. Although the United States leads the world in its preponderence of national organizations providing comprehensive assistive technology information, the problem still remains that people with disabilities may not know about telecommunication service improvements or other assistive technology because they don't know where to look for infomation. The following are just a few of the hundreds of organizations that offer that kind of information. A short description explaining the mission of each organization is included along with a toll-free number. A table of the names of organizations and their telephone numbers is on page 22.

One of the best sources of free information for people with disabilities is the **Job Accommodation Network,** a federally-funded information and referral service in operation since 1984. The telephone counselors are friendly and knowledgeable about assistive technology. The counselors also can provide information on adapting environments to work, rest or play. For instance, a person who must remain in bed for long periods of time may need to adapt his or her environment to allow a flash of light to answer a telephone, turn on a TV or acomplish some other task.

The Job Accommodation Network's approach is to customize a solution for a person with a disability and offer suggestions on restructuring a job using a piece of equipment. Typically, a counselor reviews a person's request, provides some feedback and follows up the contact with literature on a product that may be suitable for the person's use. Included in the mailing is a questionnaire that asks the recipient to evaluate the product or the service should he or she use it. Products or services that don't receive passing marks aren't recommended by the network to future callers. This action helps the organization avoid unsatisfactory products and encourages the diffusion of credible information.

Job Accommodation Network: (800) 526-7234.

Begun in 1992, the **Technology Information Project** of Seaside Education Associates at Lincoln Center, Mass., provides information on assistive technology along with referrals. According to director Paula Sotnik, the project's goal "is to increase awareness of the uses and benefits of assistive technology and encourage people to seek more information from appropriate local sources" (Personal communication January 31, 1993).

Technology Information Project
P.O. Box 341
Lincoln Center, MA 01773
(800) 886-TIPP

The **Education Resources and Information Center** (ERIC) is prime source of information for assistive technology and software databases. Information that once was provided by the Center for Special Education Technology is now available from the ERIC database. ERIC may be accessed through 700 locations including most major university libraries and some public libraries. ERIC provides a "Directory of Assistive Technology Data Source" that lists a number of useful organizations in an at-a-glance format. Each entry includes the full name, address, telephone, services and a brief description of the mission of that organization.

Education Resources and Information Center: (800) USE-ERIC

Another useful organization is **ABLEDATA**, considered one of the largest information source in the United States for products for people with disabilities. It lists thousands of products including devices for personal telecommunication and provides up to eight pages of free information. In additon, ABLEDATA provides custom searches of products.

ABLEDATA-National Rehabilitation Information Center
8455 Colesville Rd.
Suite 935
Silver Spring, Md. 20910-3319
(800) 346-2742

Another source of information is the **Alliance For Technology Access**, a coalition of people with disabilities, professional organizations and community groups and developers of computer equipment and other technology. The Alliance began in 1987 and focuses on computer solutions for people with disabilities. The various offices are electronically linked to each other and other national databases and electronic bulletin boards to share information. A number of states have resource centers that are members of the Alliance. These ATA centers can help people find an appropriate computer or adapt a computer to a special need.

Alliance For Technology Access
1128 Solano Avenue
Albany, CA 94706
(510) 528-0747

The World Institute on Disability is concerned with issues "that are central to the goals of integration and independence for persons with disabilities." According to Susan Brown of WID, "We say accessibility should be built into all technology" (Pesonal communication, March 19, 1993).

The World Institute on Disability
510 16th Street
Suite 100
Oakland, CA 94612
(510) 763-4100

The **Trace Research and Development Center** is another source of information. Formed in 1971, the Trace Center's initial mission was to help people who are non-speaking and who have severe disabilities communicate. More recently, however, the mission includes research in communication and people with disabilities and the use of computers, communication aids and home environmental controls. A primary goal is to make this technology accessible to everyone.

The Trace Center draws on a number of fields in its pursuit of solutions. Headquartered in the Waisman Center and the Department of Industrial Engineering at the University of Wisconsin-Madison, the Center relies on more than 20 specialists with backgrounds in electrical engineering, computer science, industrial engineering, speech pathology, biomedical engineering, psychology, communicative disorders, and occupational therapy. The Center conducts its own research on computer software and products including sophisticated analysis. In addition, the Center designs computers and software with people with disabilities in mind. Training also is available from Trace Center workshops for parents and professionals working with disabled people.

Trace Research and Development Center
S-151 Waisman Center
Highland Avenue
Madison, WI 53705
(608) 262-6966

Conclusions

Technological innovations for people with disabilities are changing so rapidly that most printed lists are out of date shortly after publication. This development means that users who depend on opinion leaders and early adopters to review promising technology can't provide much current information. An inexpensive approach is to contact the preceding organizations, most of which have their toll-free telephone numbers, a convenience that encourages the diffusion of information. For now, the best hope for spreading the information of innovations as well as policy initiatives is for consumers to connect to others in similar situations and share information using the high-speed communications: telephones and on-line computer systems. The national organizations listed earlier monitor the continuous innovations--extensions of existing products--and survey both industry and laboratories for discontinuous innovations--major technological advances. These groups serve as information exchanges and act as early adopters on a grand scale, constantly evaluating innovations for their effectiveness. While the interaction of exchanging information may not be as personal as a tete-a-tete meeting, the value of the information is unaffected. If seen as a community that advocates rights for people with disabilities, these organizations can duplicate the action of the social system described by Rogers and perform a function similar to one neighbor giving his or her opinion on a new product or service.

For users who want a face-to-face meeting, most communities in the United States have a committee associated with employment of people with disabilities and these groups work with people with disabilities to find information and resources. Foreign countries also offer a similar kind of support network. In addition, social service agencies can refer consumers to sources of information and organizations committed to spreading information. As databases improve and organizations overlap, the pool of information may become more centralized. This behemoth of technological information may be too impersonal to enhance the diffusion of information on innovations unless it is perceived as part of the big family of supporters for people with disabilities. To be effective, it will have to parallel the action of a community where the mid- to late-adopters can sense that the information is presented with their best interests at heart.

Another approach is the traditional search of printed materials. Printed sources often are favored by consumers and are perceived as more competent and "trustworthy information sources than other nonpersonal sources (Strutton and Lumpkin, 1992, p. 22). Despite this tendency, some groups such as the elderly tend to rely on interpersonal sources primarily in making buying decisions (Strutton and Lumpkin, 1992). Consumer involvement also contributes to the adoption of an innovation (Strutton and Lumpkin, 1992). When consumers are highly involved in learning about the innovation, they become more involved in the process and more likely to adopt.

The disadvantage of obtaining information via a telephone call or other manner to one of these organizations is that the user has no basis on which to evaluate the source of information. While each organization may have some track record and reputation, a first-time caller is vulnerable to bad information. In this regard, substituting an impersonal information retrieval system for a person who is actually experimenting with the technology is an unsatisfactory trade-off and does nothing to override the tendency reported by James Coleman, that people are more likely to accept a review of an innovation when it comes from someone that they know and trust, than from a third party such as a scientific report. Nonetheless, the best strategy for now to learn about technological developments is to make a personal commitment to seek information on innovations. Users who aggressively seek information can accelerate the diffusion process.

Author and entertainer Garrison Keillor recently wrote, "Nothing makes me happier on a sunny day than to think of how wrong I've been in the past. The old fears of people like me that technology leads to totalitarianism and cultural sterility do not come true. The computer, the fax, the car phone, the answering machine, all seem to lead to a more civilized life, affording us greater privacy and freedom, for less (1993).

That freedom is not lost on people with disabilities, but with freedom comes responsibility. People with disabilities must not wait for agencies to centralize information on telecommunications and assistive technology for dissemination to people with disabilities. For diffusion of information to occur most efficiently, potential users must not wait for a leisurely trial and experimentation stage but compress the diffusion stages by examining the experience of other users. In the case of a piece of equipment such as a headwand that can be used to tap out a message on a computer keyboard, most manufacturers will allow the user who is disatisfied with the product to exhange it or obtain a refund. In addition, some manufacturers of assistive technology allow customers to try the equipment for 30 to 60 days before committing to purchasing it.

Adopting an innovation begins with a search of the technological solutions a person seeks. Once the search is underway, the seeker will enter the information labyrinth with its dreaded deadends and false leads but, evenutally, the struggle will yield some daylight. Each of the organizations listed earlier can provide practical information as well as clues to future government policies; however, the only way to learn about the marketplace is to mimic the behavior of an early adopter--and not necessarily experiment with every new device with promise for people with disabilities--but connect with others on these products, discover the facts and converge into the information stream. By leapfrogging over the typical steps in the diffusion process, a user can benefit more quickly from the ever expanding array of technological solutions for people with disabilities.

Table of helpful organizations

Name	Contact information
Job Accommodation Network	(800) 526-7234
Technology Information Project	(800) 866-TIPP
Education Resources & Information Center	(800) USE-ERIC
ABLEDATA	(800) 346-2742
Alliance For Technology Access	(510) 528-0747
The World Institue on Disabilty	(510) 763-4100
Trace Research & Development Center	(608) 262-6966

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The Effects of Specific Knowledge of Digital Image Manipulation Capabilities and Newspaper Context on the Believability of News Photographs

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A mixed factorial 2 (newspaper) x 2 (video exposure) with repeated measures of the first factor—once prior to and once following video exposure—examined the effects of reader knowledge about digital image manipulation techniques and of newspaper context on reader assessment of photographic credibility.

Both credibility and believability scores differed according to which newspaper a photo was seen in (a within-subject comparison). Photos appearing in *The New York Times* were rated more believable than the same photos appearing in the *National Enquirer* and the stories they appeared with were seen as more credible in the former than in the later newspaper context. There was no significant difference between scores by those who had seen a video about manipulation techniques and those who had not, regardless whether the photo had been seen in a high or low credibility paper (a between-subject comparison).

There was a significant interaction between the item measured (photo or newspaper in general) and the newspaper context where believability of the photo was greater than the newspaper's believability if seen in the *National Enquirer*, but only equal to the believability of *The New York Times*. This suggests that photographs have credibility that is distinct from the publication in which it appears and that public awareness of digital retouching techniques may not have the impact on newsphoto credibility that some ethicists fear.

Presented to the Visual Communication Division
of the Association for Education in Journalism and Mass Communciation
at the annual meeting in Kansas City, August 1993

The Effects of Specific Knowledge of Digital Image Manipulation Capabilities and Newspaper Context on the Believability of News Photographs

The utilization of computers to edit photographs at newspapers and other news publications over the course of the last decade has engendered considerable concern over the ethical use of such technology and its possible threats to the credibility and even the believability of news photographs. These threats come not only from the increased ease with which unscrupulous operators can now change photographic images, but perhaps also from a diminution of the intrinsic faith readers have had in photography as they learn more about digital imaging. These threats, placed in a context of a general concern about media credibility, reinforce the importance of ethical discussions now taking place in the profession.

Professional concern about credibility is not new[1] and considerable research has addressed the topic,[2] some of it at the behest of mass media organizations. But the literature has focused on the media as a whole or perhaps individual publications rather than on specific elements used to transmit the message.

In 1985 the American Society of Newspaper Editors published the results of a year long study of public attitudes toward the media conducted by MORI Research, Inc. It suggested that a large majority of the public had serious reservations about press credibility.[3] Shortly thereafter, however, surveys by The Gallup Organization for the Times Mirror corporation suggested that there was "no credibility crisis for the nation's news media."[4]

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[1] Norman E. Isaacs, "The New Credibility Gap—Readers vs. The Press," *ASNE Bulletin 66* (February 1966).

[2] Carl I. Hovland and Walter Weiss, "The Influence of Source Credibility on Communication Effectiveness," *Public Opinion Quarterly* 15 (Winter 1951-52):635-50; Bruce H. Westley and Werner J. Severin, :Some Correlates of Media Credibility," *Journalism Quarterly* 41 (Summer 1964): 325-35; Richard F. Carter and Bradley S. Greenberg, "Newspapers or Television: Which Do You Believe?" *Journalism Quarterly* 42 (Spring 1965): 22-334.

The apparent contradiction is partially explained by two different operational definitions of credibility In the ASNE study, credibility was measured using 12-item index that measured two dimensions of credibility: as believability and as community affiliation.[5] The Gallup study more specifically measured the believability of news reporting. Careful comparison of the results from the two studies indicates the measured differences of opinion about the media in general are not as severe as initial reports suggested.[6]

There are, however, most definitely different levels of believability among the various media, although not specifically between television and print as is often asserted.[7] A portion of the Gallup study had respondents rate the believability of a long list of specific media organizations and publications.[8] They found that nationally prestigious newspapers like *The*

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[3] McGrath, Kristin, *Newspaper Credibility: Building Reader Trust.* (Washington, D. C.: American Society of Newspaper Editors, 1985), 13.

[4] The Gallup Organization, *The People & The Press: A Report on an Investigation of Public Attitudes Toward the Press*, (Princeton, N. J.:, 1986) 4.

[5] Philip Meyer, "Defining and Measuring Credibility of Newspapers: Developing an Index," *Journalism Quarterly* 65 (Autumn 1988): 567-74, 588.

[6] See Cecilie Gaziano, "How Credible Is the Credibility Crisis?" *Journalism Quarterly* 65 (Summer 1988): 267-78, 375, for discussion of other methodological differences between these two and two other studies on media credibility.

[7] Michael J. Robinson and Andrew Kohut, "Believability and the Press," *Public Opinion Quarterly* 52 (1988):174-89.

[8] Ibid., 175.

New York Times were considerably more believable than local papers and that they were in turn more believable than national papers like the *National Enquirer*.[9] Rather than a split according to medium, a factor analysis suggested people group the mass media according to how they use them—either as special news sources, routine news sources or soft news sources, respectively.[10]

That the context within which a photograph appears might influence its believability seems nearly obvious, and yet it has only recently been the subject of direct investigation.[11] Research on the effects of publication context on advertisements are more numerous, however, and results there do suggest context does influence how a particular message is processed by the reader.[12]

Ethicists have been discussing photographic credibility in term of context, but the context has been one of technological change. Almost as soon as digital imaging technology entered the production process, controversy arose over how it might be used to "change reality." One early observer suggested the technology heralded "the end of photography as evidence of anything."[13] And as the technology was adopted my more and more editorial staffs, stories of moving pyramids and disappearing Coke cans abound.[14]

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[9] Ibid., 176.

[10] Ibid., 184.

[11] Danal W. Terry and Michael H. McBride, "Is Seeing Believing Where Silver and Silicon Meet? A Matter of Credibility in Advertising and News Photography Contexts," (Paper delivered at the seventy-fifth meeting of the Association for Education in Journalism and Mass Communication, Montréal, Quebec, 5 August 1992) did recently investigate photo and publication context.

[12] Crane, Lauren E., "How Product Appeal and Program Affect Attitudes Toward Commercials," *Journal of Advertising Research* 4 (March 1964): 15-18; Gary F. Soldow and Victor Principe, "Response to Commercials as a Function of Program Context," *Journal of Advertising Research* 21 (April 1981): 59-65; Cannon, Hugh M., "A Method for Estimating the Effect of Media Context," *Journal of Advertising Research* 22 (October//November 1982): 41-48; and Mark A. Pavelchak, John H. Antil, and James M. Munch, "The Super Bowl: An Investigation into the Relationship Among Program Context, Emotional Experience, and Ad Recall," *The Journal of Consumer Research* 15 (December 1988) 360-7.

Ethical concerns have focused on two related issues—that unethical operators may be able to alter images without detection and that once the public becomes aware of what the technology is capable of they will doubt the veracity of all photographs. The former possibility has generated was raised early in ethics journals[15] and since then formal statements of principle,[16] and protocols[17] aimed at establishing proper usage of the new equipment have been written. But the latter is much less a matter of adjusting old guidelines to new practices than it is adapting to a possible redefinition of what a photograph symbolizes in society's mind. Don Tomlinson forecast that:

> "If…consumers of photojournalism decide to revoke the credibility they have bestowed on photojournalism for the last century, it will be because the processes of photojournalism were at some point so revolutionized that photographic reality no longer could be trusted to be the result."[18]

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[13] Stewart Brand, Kevin Kelly and Jay Kinney, "Digital Retouching: The End of Photography as Evidence of Anything," *Whole Earth Review*, July 1985, 42-49.

[14] See Bennett Daviss, "Picture Perfect," *Discover*, July 1990, p. 54-58, and Jonathan Alter, "When Photographs Lie," *Newsweek*, July 1990, for numerous of examples of digital retouching used in editorial photographs.

[15] Shiela Reaves, "Digital Retouching: Is There a Place For It In Newspaper Photography?" *Journal of Mass Media Ethics* 2 (Spring/Summer 1987): 40-48.

[16] See that by the National Press Photographers Association, "A Statement of Principle," *NPPA Directory*, 1992, 15.

[17] *NPPA Photojournalism Ethics Protocol*, (Washington, D. C.: NPPA, July 1991).

[18] Don E. Tomlinson, "Digitexed Television News: The Beginning of the End for Photographic Reality in Photojournalism," *Business & Professional Ethics Journal* 11 (Spring 1992): 52.

Brian Winston argues that the entire notion of photographic reality has since the invention of photography been little more than a misconception and that the ultimate affect of the computer on the photograph will simply be to place it at a par with older forms of reporting like the written word—equally capable of rendering either truth and falsehood.[19]

Purpose of the Study

This study investigates the effects of publication context and of specific knowledge of digital manipulation technology on a small group of newspaper readers. The purpose is to determine if readers find the same photograph less believable in one paper than in another, and whether a short demonstration lecture about digital manipulation of photographs causes them to evaluate the same set of photographs differently than readers who had not seen the demonstration.

Based on the national findings in the Gallup media credibility studies, the following three hypotheses are advanced:

Hypothesis 1:
The New York Times, in general, will elicit higher levels of believability than will the *National Enquirer*.

Hypothesis 2:
Stories in *The New York Times* will elicit higher levels of credibility than will stories in the *National Enquirer*.

Hypothesis 3:
Photos in *The New York Times* will elicit higher levels of believability than will photos in the *National Enquirer*.

Based on the various ethical concerns about digital imaging technology, the final hypothesis is advanced.

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[19] Brian Winston, "In the Eye of the Beholder," *Information Technology Quarterly* (Spring 1990).

Hypothesis 4:
Exposure to the PhotoShop demonstration videotape will lead to lower levels of story credibility, of photo believability, and of general newspaper believability.

Method

The basic design was a mixed factorial 2 (newspaper) x 2 (video exposure) with repeated measures of the first factor—once prior to and once following video exposure. Newspaper was a within-subject variable and video exposure was a between subject variable.

This experiment required subjects to read news stories that appeared to have been photocopied from two different newspapers. After reading each story, the subject's assessment of the story's credibility and believability was measured. Half of the subjects viewed a videotape about computer software between the first and second measurements. The other half was not exposed to the video and acted as a control.

Subjects

Sixty two communication majors were recruited from a graphic communication course and offered extra class credit. A total of 60 completed both measurement waves.[20]

Stimulus Materials

In order to create a situation in which newspaper credibility and story believability could be manipulated, but where the specifics of the story's content was randomized, each of the four stories was typeset in two versions—one that duplicated the design style of *The New York Times* and one that duplicated the style of the *National Enquirer*. Each story was composed of a headline, a text block, a byline, a photograph, a cutline and enough of the folio that the publication and date of issue could be seen. All content, both photographic and typographic was identical in each version.[21] No explicit identification of the newspaper was made other than design style and the folio line.

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[20] Two students participated in the first wave of questionnaires but did not attend the later class session where the second wave was administered. One had a swim meet, the other overslept.

Each of the news stories were about the Prince and Princess of Wales, celebrities who have been the subject of factual reporting in both publications during the last three years. A story comprised of the same elements that appeared to be from the *Chicago Tribune* about the Duke and Duchess of York was also prepared.

Although each subject read all four stories, the specific version read and the order in which they were read was according to a random assignment of the subject to one of the 48 possible orderings. In this way, the effects of a story's content were randomly applied to all levels of all factors.

The videotape was created by Adobe, Inc. computer software. The 27-minute presentation demonstrates the capabilities of the company's PhotoShop software at digitally manipulating photographs displayed on a computer screen. The most salient feature of the tape is a segment where the computer operator combines two photographs into a single "realistic" image that "the viewer would never know wasn't an actual scene."

Dependent Measures—Story Credibility

The credibility of the newspaper story as a whole was measured on a scale that summed subject responses to ten five-point semantic differential items used in the ASNE studies.[22] The items were preceded by a statement that read, "considering what you know from the story as a whole, please circle the dot in between each pair of words and phrases with opposite meanings that best represents how you feel about the newspaper article you just read."[23] The scale's reliability coefficient was Cronbach's alpha = .92.[24]

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[21] See appendix for examples of the stimuli.

[22] Cecilie Gaziano and Kristin McGrath, "Measuring the Concept of Credibility," *Journalism Quarterly* 63 (Autumn 1986): 451-62.

Dependent Measures—Story Element Believability

The believability of each of the story's four principal elements—headline, text block, photograph and caption—was measured using a four-point semantic differential of "believable—not believable" as used in the Gallup poll study[25] The items were preceded by the statement: "Thinking now of the separate parts of the story (text, headline, photo, caption), please rate how much you think you can believe each individual part on a four-point dot scale where "believable" means you can believe all or most of it and "not believable" means you can believe almost nothing of it."

Dependent Measures—Newspaper Believability

The believability of the newspaper in general was measured using the same four-point believability scale describe above but was preceded by the statement: "Now consider the particular newspaper the story was printed in and indicate just how believable or unbelievable you consider the paper to be in general."

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[23] See appendix for an example of the questionnaire.

[24] Eleven items appeared on the questionnaire. One item, "watches after the reader's interest," was correlated with the other items at a much lower level than were the other items and it was not included in the scale.

[25] Robinson and Kohut,"believability and the press," 176.

Apparatus

All versions of the newspaper stories were created by the author using Quark XPress on a Macintosh computer. The text was originally published in either *The New York Times* or *People* magazine and the author's name was maintained in the byline. The photographs were originally published in either *People* or *Royalty* magazine and were pasted into a blank window of the Quark printout just prior to duplication. The headlines and the captions were written by the author. The paste-ups were photocopied onto white 8 ½" x 11" business bond using a month-old Royal 2250 copier. Reproduction quality level was consistently good across all eight versions of the story.

Subjects watched the videotape on a 21" JVC Trinitron television set played on a JVC ½" videocassette recorder while seated in comfortable seats. Subject distance from the television set ranged from six to 16 feet.

Procedure

Measurements of the dependent variables were made during two separate administrations of the stimuli. The first wave was a pretest of all subjects at the same time in a large lecture hall. The second wave was either a treatment (viewing the videotape) and a posttest or just a posttest only.

On Monday, the female experimenter distributed packets of material to the class immediately after the regularly scheduled lecture. Each packet was labeled according to its ordering. Prior to reading any of the stories, the subject was instructed to write his or her name on the cover sheet so that the packet received in the second wave would be according to the pre-established ordering.[26] Subjects were also informed that they should read

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the enclosed newspaper stories as though they would need to carry on a conversation about the topics later on in the day.

On signal from the experimenter, subjects opened the packet to the first of three stories. It was about the Duke and Duchess of York and was in identical form for all subjects. Its purpose was to familiarize subjects with the story type and the questionnaire and to offset the novelty of the stimuli. Once the trial story's questionnaire was completed, the subject proceeded through the remaining two stories and questionnaires according to his or her own pace.

Posttests were administered during four pre-existing laboratory sessions held in a small computer lab. Two labs met the day after the pretest and they received the video treatment. The other two labs met three days after the pretest. Therefore, subject exposure to the videotape presentation was not strictly random—it was dependent on scheduling choices made during registration over which the experimenter had no control. However, both the treatment and the control groups were equally distributed between morning and afternoon lab sessions and none of the labs met on a Friday. Neither group, therefore, was scheduled at particularly problematic time periods like early morning or Friday afternoon.

At the time of the experiment, course work was focused on the use of graphic images in the mass media. At the beginning of each lab, the regular instructor introduced the videotape as though it were a normal part of the class. After it was finished she told the subjects that "this type of software is used at virtually all daily newspapers now, even at the *Daily* (campus) newspaper. They don't use all of the features, but they are

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[26] Subject anonymity was maintained by removing the cover sheets once the match of pretest and posttest packets was made.

available to them." An hour later, after the regular lesson, the experimenter entered the room and administered the posttest which consisted of two stories and questionnaires. The remaining two labs received posttest materials at the end of their lab administered by the experimenter, but did not see the videotape.

Results

Mixed-factor analysis of variance was used to analyze the three dependent variables. Symmetry conditions were tenable in each analysis and F ratios are all from averaged univariate results.

Hypothesis 1:

The hypothesis predicted that *The New York Times*, when considered generally, would elicit higher levels of believability than will the *National Enquirer*. The effect of newspaper on the general newspaper rating was significant in the predicted direction, $F(1,58) = 89.89$, $p<.0001$.

Hypothesis 2:

The hypothesis predicted that the newspaper in which stories appeared would influence a story's perceived credibility. Stories in *The New York Times* were rated significantly higher than were stories in the *National Enquirer*, $F(1,58) = 9.93$, $p<.003$. Interestingly, the effect of the time difference between pretest and posttest was also significant, $F(1,58) = 14.01$, $p<.0001$, suggesting some regression toward the mean when using the ten-item scale repeatedly.

Hypothesis 3:

The hypothesis predicted that the newspaper in which photos appeared would influence the photo's perceived believability. Photos in *The New York Times* were rated significantly higher than were photos in the *National Enquirer*, $F(1,58) = 7.88$, $p<.007$.

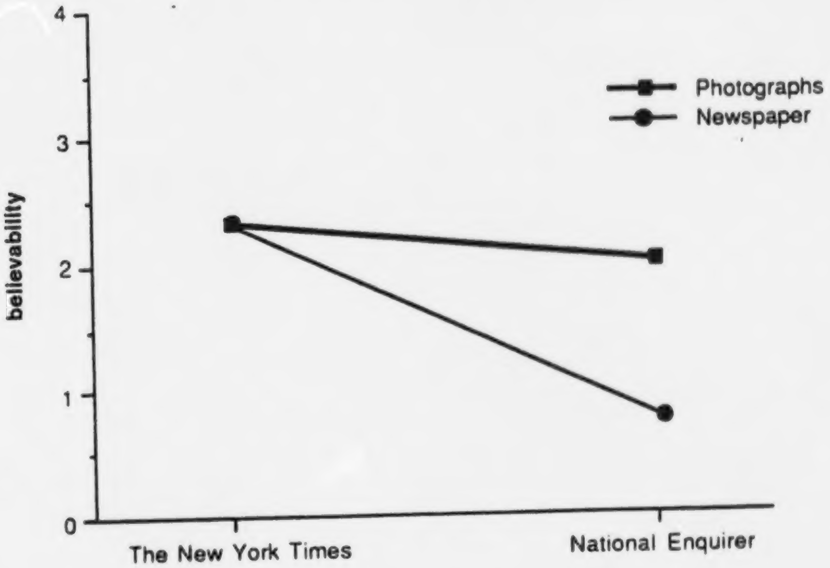
Hypothesis 4:

Exposure to the PhotoShop demonstration videotape did not significantly affect scores on any of the dependent variables.

Examination of the averaged means for both measures of the believability of the newspapers generally and of the averaged means for both measures of the believability of photographs specifically suggested a possible interaction between the two dependent items and the newspaper variable. Analysis of variance with both believability variables dependent indicated that the interaction was significant, $F(1,58) = 47.00$, $p<.0001$. The interaction was such that while the believability of both the photos in *The New York Times* and the newspaper considered generally was the same, the photos in the *National Enquirer* were more believable than was the newspaper generally (see Figure 1.)

Figure 1.

Averaged mean believability ratings as a function of newspaper and item measured



Discussion

The goal of this study was to explore the effect of specific knowledge about recent advances in digital photographic manipulation and of editorial context on readers' assessment of the believability of newsphotos and the credibility of news reports while controlling for the general believability of the newspaper in which they are published. Concern about the future credibility of newsphotos by professionals generated the basic questions underlying the study while previous research into news media credibility provided measures.

That the specific knowledge about digital manipulation techniques did not significantly affect subjects' assessments of either the photos they evaluated or the newspapers from which they had apparently come may provide some comfort to those professionals. Believability and credibility seem to be dependent on the general reputation of the newspaper and perhaps on the physical appearance of specific photographs under examination rather than on knowledge of techniques used to produce photographs.

But one dare not accept the null hypothesis as true. Additional investigations using more specific information about digital manipulation as used at professional newspapers may well show an effect. Our videotape simply stressed the capabilities of the software generally. Had it both demonstrated the capabilities and shown examples of retouched photographs that have been published by reputable newspapers and magazines, the effect might have been stronger.

There is also the possibility that our subjects, college students majoring in communication, are generally more skeptical than the general public or are simply more aware of digital manipulation techniques and practices. Respondents in the Robinson and Kohut study rated the believability of national newspapers like *The New York Times* at 2.99 and the *National Enquirer* at 1.49. Using the same scale, subjects in this experiment rated them at 2.32 and 0.78 respectively, lower for both, but especially low for the latter.

The results do suggest that the believability of photographs is not entirely tied to the believability of the publication in which they appear, however. The specific photographs used in this experiment were seen as more believable when they were seen printed in *The New York Times* than when printed in the *National Enquirer*. But while those same photos were only as believable as *The New York Times* itself, they were seen as much more believable than the *National Enquirer* generally.

This suggests that photographs have a credibility beyond that of the medium of photography itself and a perhaps are as dependent on the nature of the information they present as are the words in a text story. People believe photos if they make sense—if the information they provide fits comfortably within their existing understanding of the world—not because they are exact renderings of reality. The fact that photos can lie (and always have)[27] may be much more appreciated and accepted by readers than many photojournalists might like to admit.

Although it examines the effect of actually identifying manipulated visuals rather than simply extending the possibility that manipulation could have occurred easily, a recent study investigating the credibility of television pictures found no difference between those judging videos that were identified as staged and those judging unlabeled video.[28] Attitude change takes place only when new information is at odds with one's existing understanding of reality.[29]

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[27] Arthur Goldsmith, "Photos Always Lied," *Popular Photography* (November 1991) 68-75.

Further research on the believability of news photographs may provide further insights into the nature of photographs and human understanding of reality.

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[28] Karen Slattery and James T. Tiedge, "The Effect of Labeling Staged Video on the Credibility of TV News Stories," *Journal of Broadcasting & Electronic Media* 36 (1992): 279-86.

[29] See Shapiro, Michael A., "Memory and Decision Processes in the Construction of Social Reality," *Communication Research* 18 (February 1991): 3-24.

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Patterns of Computer Use in Newspaper Newsrooms:

A National Study of U.S. Dailies

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Presented to The Newspaper Division
Association for Education in Journalism and Mass Communication
Kansas City, Missouri
August 1993

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As one writer put it, we have moved from a paper information age to an electronic information age. We are in "a communication explosion -- an electronic maelstrom of satellites, microprocessors, computers, and advanced phone and radio services."[1] This is the communication revolution -- the information society.

As a result, new ways of gathering and distributing information keep challenging journalists and the newspaper industry. And, while studies of newspaper computerization have proliferated, none has been comprehensive enough to give scholars a thorough look at the role of computerization in daily newspaper newsrooms. A survey of the published research in this area yields extremely interesting data based largely on small samples of U.S. newspapers. Some examples:

Some scholars argue that there is no longer a rigid distinction between print and electronic media in a world in which "electronic magazines" and distant databases -- computerized information services -- are available on the personal computer.[2] An example is that there are thousands of databases and information repositories on the Internet, most of them free, in addition to thousands of topical discussion groups, some of which include top experts.[3]

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[1] Frederick Williams, *The Communications Revolution*. rev. ed. (New York: New American Library, 1983), back cover.

[2] Melvin L. DeFleur and Everette E. Dennis *Understanding Mass Communication* (Boston: Houghton Miffin, 1988), p. 248.

Although some editors are beginning to question whether new technology is helping or hurting the quality of journalistic work, they admit that the computer has become a staple in most newspaper newsrooms, and life for some journalists is easier, or at least faster.[4]

Koch argues that the marriage of computers and online libraries creates a radically new technology that will fundamentally alter the relations between writer and news subject.[5] Previously, Bagdikian and Smith had similar arguments.[6] Bagdikian said that the coming of computers and databases would force journalists to take on research librarian roles. Smith argued that in computer-controlled information systems the sovereignty over text moves from the supplier of information to the controller of the technology.[7]

Other scholars deemed the new computer technologies better tools for the "same old journalism," as Philip Meyer put it.[8] Ward and Hansen pointed out two weaknesses of this now classic view: first, these scholars fail to mention the role of the news library in supplying information to reporters and editors; and, second, many studies took place before commercial databases, electronic news libraries, fax machines, portable computers and personal computers were widely used in daily newspapers.[9]

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[3] Joe Abernathy, "Casting the Internet: A New Tool for Electronic Newsgathering," *Columbia Journalism Review*, p.56 (January/February 1993).

[4] Andrew Schneider, "The Downside of Wonderland," *Columbia Journalism Review*, p.55 (March/April 1993).

[5] Tom Koch, *Journalism for the 21st Century: Online Information, Electronic Databases, and the News* (New York: Praeger, 1991), p. xiii.

[6] Ben H. Bagdikian, *The Information Machines* (New York: Harper & Row, 1971) pp. 280-281; Anthony Smith, *Goodbye Gutenberg* (Oxford University Press, 1980), p.118.

[7] Anthony Smith, *op. cit.*, pp.20-21.

[8] Tim Miller, The Data-base Revolution," *Columbia Journalism Review* 26:3 (September/October 1988), 35

But interviews with senior editors from twenty-five large and mid-sized news organizations generated mixed reviews about the computers' effect on productivity. Twenty percent of those questioned said the use of computers reduced the "get-it-in-the-paper" time of projects; the other 20 percent said there was no measurable change from pre-computer days. But 60 percent said the magic boxes slowed production significantly. The reasons ranged from unfamiliarity with computers or software to the fact that reporters were dealing with far larger pools of information or were spending more time digging in dry wells.[10]

In the same study, when asked if computers improved the overall quality and readability of stories, 28 percent of the editors said they saw improvement, and 16 percent noted no change. But 56 percent said the impact, the relevance of the topic and the overall quality had diminished.

Quite a few studies have been done on the use of databases in newsrooms. Endres found that, among the 96 newspapers surveyed, only 21 percent used a database-search system. News personnel desiring a database search had to go through a librarian, who controlled how much and what type of information could be accessed.[11]

After studying the work habits of 40 editorial writers, Kerr and Niebauer found that 68 percent either seldom used or never used information retrieval systems in conducting their research. Writers who did not have to conduct a database search through a third party, such as a librarian, were more likely to use databases and to be more satisfied with their use.

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[9] Jean Ward and Kathleen A. Hansen, "Journalist and Librarian Roles, Information Technologies and Newsmaking," *Journalism Quarterly*, 68(3):491-498 (Fall 1991).

[10] Andrew Schneider, *op. cit.*, p.55.

[11] Fredric F. Endres, "Daily Newspaper Utilization of Computer Data Bases," *Newspaper Research Journal*, 7:29-35 (Fall 1985).

Hansen, Ward and McLeod found in a study of news library use in the production of news at metropolitan dailies that not only was the library a provider of information for reporters and editors but that 38 percent of those studied used electronic databases made available through library sources.[12] In a follow-on study, these researchers examined reportorial use of the electronic news library after its initial introduction at a large metropolitan newspaper. All of the beat reporters used the electronic library for background research. But 16 percent of all news staffers said they did not use the new system. Also, the news staffers had to request news librarians to conduct online searches of commercial databases such as NEXIS.[13]

Jacobson and Ullman found that 75 percent of surveyed librarians thought database use led to more research and improved news coverage; 71 percent of the surveyed journalists said databases were an "important" or "very important" component of news reporting. Overall, results indicated more agreement than disagreement about the value of databases between the two groups of people in news reporting.[14]

A study of 105 newspapers over 100,000 circulation found that the electronic news library had become standard at those newspapers studied and that 90 percent subscribed to at least one database, with a median number of four taken.[15] Also, the authors found that 97 percent of newsrooms were equipped with portable computers and 64 percent of newsrooms were equipped with personal computers. Another finding is that in 60 percent of newsrooms where personal computers are available, reporters search public records via computer. Only 34 percent of all 105 libraries studied have librarians searching public records to contribute to news reports. Thus, computer searching of public records appears to be a distinctive role of reporters. The results of this study show that electronic information technologies have been adopted by an overwhelming majority of the nation's biggest dailies. Use of the personal computer for "computer-assisted reporting" allows creation and analysis of information never previously available for news reports.[16]

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[12] Kathleen A. Hansen, Jean Ward and Douglas M. McLeod, "Role of the Newspaper Library in the Production of News," *Journalism Quarterly*, 64:714-720 (Winter 1987).

[13] Kathleen A. Hansen, Jean Ward and Douglas M. McLeod, "Effects of the Electronic Library on News Reporting Protocols," *Journalism Quarterly*, 65:845-852 (Winter 1988).

[14] Thomas L. Jacobson and John Ullman, "Commercial Databases and Reporting: Opinions of Newspaper Journalists and Librarians," *Newspaper Research Journal*, 10:15-25 (Winter 1989).

Using the same dataset, the researchers also found that various competitive conditions and chain ownership had no significant impact on the resource measures. This finding is consistent with most previous research on the relationship between newspaper competition, ownership and content performance.[17]

An earlier study by Miller also looked at how the database revolution was faring at newspapers.[18] He found that newspapers doing online database searches had quadrupled from

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[15] Jean Ward and Kathleen A. Hansen, "Journalist and Librarian Roles, Information Technologies and Newsmaking," *Journalism Quarterly*, 68(3):491-498 (Fall 1991).

[16] Jean Ward and Kathleen A. Hansen, *op. cit., p. 496.*

[17] John Busterna, Kathleen Hansen, and Jean Ward, "Competition, Ownership, Newsroom and Library Resources in Large Newspapers," *Journalism Quarterly*, 68(4):729-739, (Winter 1991).

[18] Tim Miller, "The Data-base Revolution," *Columbia Journalism Review*, September/October 1988, p. 35-38.

1982 to 1986. However, in-house databases, like the one created by the *Atlanta Journal-Constitution* for its Pulitzer Prize-winning series on the discriminatory trends in the Atlanta mortgage lending industry, were not common. Miller concluded, "The time is now ripe to pursue computer journalism. As an increasing amount of public information becomes computerized, the computers needed to analyze it are becoming cheaper and also faster."

A survey of journalists at four daily newspapers found that almost nine of 10 journalists use Vu/Text every week, most often to obtain background information or to check facts. Younger journalists seem to make more use of databases and about half of those surveyed felt that use of database information resulted in better stories.[19]

The same study also indicated that database use in the news reporting process is moving out of the initial trial stage and into a wider adoption phase. Questions remained about whether this was true for the whole newspaper industry or only for the large newspapers[20] and selected sets of newspapers previously studied.[21] These questions could be asked of many of the results uncovered by previous researchers; almost all are based on small samples of newspapers, most often large newspapers.

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[19] Cynthia De Riemer, "A Survey of Vu/Text use in the newsroom," *Journalism Quarterly*, 69(4):960-970 (Winter 1992).

[20] According to Melvin L. DeFleur and Everette E. Dennis, *Understanding Mass Communication*, (Boston: Houghton Miffin, 1988), p. 52, small dailies are those newspapers that have circulations under 50,000; medium-sized newspapers are those that have circulations between 50,000 and 100,000; large newspapers are those that have circulations above 100,000.

[21] In previous studies researchers focused on either large newspapers (over 100,000 in circulation) or some convenient sample of newspapers. This is understandable because the computer technology may not have been available to many small and medium-sized newspapers due to high costs of the hardware/software, computer literacy and the willingness to change. But the prices of personal computers came down so fast that they became affordable for most newspapers in the 1990s.

Thus, a logical extension of scholarship on the computer's impact on newspaper newsrooms would include a study of the entire daily newspaper population, including medium and small papers. Further, there was a clear need to study the impact of personal computers in newsrooms. PCs are versatile in that they allow users, in this case reporters, to run thousands of off-the-shelf software programs that can assist with the news-gathering process. Further, they are inexpensive compared to minicomputers and mainframes, which traditionally have been used for little more than writing and editing.

In recent years, improvements in networking technology have enabled newspapers to adopt PCs as replacements for more expensive and less capable dedicated terminals. As a result, we expected to find a high adoption rate for PCs in newspaper newsrooms. Increasingly, we expected to find PCs replacing mainframe and minicomputer terminals as reporter and editor workstations.

After reviewing earlier studies, we also found the following gaps in our knowledge:

--How do small- and medium-sized newspapers use databases, and how does that pattern compare to that of large newspapers?

--What are the factors affecting the adoption of computer-assisted reporting, the use of computer applications, and the number of databases in use?

Thus, the following hypotheses were postulated to guide this study:

H1. There would be significant differences among the small, medium and large newspaper groups in terms of computer types, applications, training and the perceived future of newspapers.

H2. There would be a significant difference among the small, medium and large newspapers in terms of computer adoption rate.

H3. Because computer-assisted reporting is a new and probably more expensive way of reporting, there would be significant differences among small, medium and large newspapers in adopting computer-assisted reporting.

Further, in our nationwide study of daily newspapers, we sought answers to these specfic questions:

Q1. What is the main motivation for newsroom computerization?

Q2. What are the functions performed by newsroom computers?

Q3. What external databases do newsrooms access regularly?

Q4. What factors predict the amount of computer-assisted reporting done at a newspaper?

Q5. What factors predict the number of functions newsroom computers handle?

Q6. What factors predict the amount of external database use?

Methodology

A national mail survey of 1,586 daily newspapers was conducted in July 1992. The mailing list was derived from names and addresses in the *Editor and Publisher International Yearbook*. The managing editor of each newspaper received a four-page questionnaire composed mostly of multiple-choice questions. The mailing yielded 330 respondents for a response rate of 20.8 percent

Among other things, the questionnaire asked managing editors or their representatives to provide answers to questions designed to obtain interval data. These questions involved the number of years the newsroom had been computerized, number of PC terminals, number of minicomputer terminals, number of mainframe terminals, number of computer functions available to users, number of external databases accessed regularly and number of hours external databases had been used in the past month. Respondents also were asked to provide information on the percentage of newsroom employees who had received formal computer training, the number of hours training a newcomer is given on the computer system, the number of times the newspaper had used computers to analyze government data for stories in the past year and the number of times the newspaper had analyzed government data from nine-track tapes in the past year. Finally, editors were asked to predict how many years it would be before computerized delivery of local news occurred in their communities.

For regression analysis, three factors served as dependent variables: the number of computer functions available, the number of external databases accessed regularly, and the number of times computers had been used to analyze government data in the past year.

The questionnaire also asked four questions requiring categorical answers: the main motivation for newsroom computerization, the most important improvement after computerization, which functions newsroom computers provide, and which external databases the newsroom accesses regularly.

Demographic questions also were asked. These included education level of staffers, newspaper circulation, number of newsroom employees, ownership, competition, AM, PM or all-day paper; and the profile of the person in charge of newsroom computing. For that person, information was obtained to determine age, gender, race, marital status, position, number of years in the job, years in the industry, income and education.

Results

Among the 330 respondents, 41 indicated that their newspapers had a daily circulation of more than 100,000. This is 34 percent (N=121) of the large newspapers listed in the 1992 *Editor and Publisher International Yearbook*.[22] Sixty indicated that their circulations were between 50,000 and 100,000, which is 47 percent (N=129) of the medium-sized newspapers. 222 indicated that their circulations were below 50,000, which is 18 percent (N=1236) of the small newspapers. Seven respondents failed to respond to this question. The average circulation of the respondents' newspapers was 63,992, about 1.7 times larger than the national average.

Hypotheses 1-3

Table 1.1 shows that the average number of years U.S. daily newspapers have been computerized is 11.7 years (s.d.=4.7). An analysis of variance shows that small newspapers have been computerized for significantly shorter periods of time than medium and large newspapers ($F_{(313,2)}$= 13.508, $p < .0001$).

Table 1.2 shows that the average number of personal computers in use at U.S. daily newspaper newsrooms is 15.8 (s.d.=26.4). Only 37 respondents (11.6 percent) said their newspapers have no PC at all. This result confirms our belief that PCs have made significant inroads into the newspaper industry. The means of small, medium and large newspapers are significantly different ($F_{(310,2)}$= 51.407, $p < .0001$).

For minicomputer terminals, Table 1.3 shows that the average is 30.2 (s.d.=81.4), but 184 respondents (57.9 percent) said their newspapers have no minicomputer terminals. Again, the responses of small, medium and large newspapers are significantly different ($F_{(308,2)}$= 101.658, $p < .0001$). Table 1.4 shows that the average number of mainframe terminals for U.S. dailies is 6.1 (s.d=26.4). Among the respondents, 221 (69.3 percent) said their newspapers have no mainframe terminals.

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[22] According to the *Yearbook*, data for the 1992 issue was collected before September 30, 1991.

Surprisingly, Table 1.5 shows that the average computer in U.S. newsrooms handles only 5.0 functions (s.d.=3.1). This seems to indicate that newspapers have not done much to take advantage of the increased functionality of PCs. Small newspapers use their computers for significantly fewer functions than their larger counterparts ($F_{(320,2)}$= 56.954, $p < .0001$).

External databases also are not as widely used as anticipated. The average number of such databases accessed regularly is only 0.8 (s.d.=1.5). Only 109 respondents (33 percent) said their newspapers regularly use one database or more. For this item, small, medium and large newspapers are significantly different from one another ($F_{(320,2)}$=181.117, $p < .0001$). Large newspapers use such databases most frequently, followed by medium-sized and small newspapers.

Table 1.7 shows that the average U.S. newsroom used external databases 13.7 hours (s.d.=87.5) during the previous month. Again, usage by large newspapers was significantly higher than by small and medium-sized newspapers ($F_{(320,2)}$= 20.042, $p < .0001$).

Nationally, only 43.3 percent of newsroom employees have received computer training (see Table 1.8). Interestingly, medium-sized newspapers have done best in this area. Small and medium-sized newspapers show significantly differences in percentage ($F_{(320,2)}$= 3.317, $p < .05$).

Nationally, newcomers to newsrooms receive an average of 6.2 hours of training (Table 1.9) with small newspapers taking the lead at 6.7 hours. No two groups are significantly different at the 0.05 level.

Computers can be used in many ways to assist the reporting process. These include analysis of budget data on spreadsheets, creation of sources databases and accessing external databases. An attempt was made to discover the degree that such techniques had been adopted by newspapers.

More sophisticated forms of reporting also exist. Computer-assisted reporting refers to the extraction of data, usually from government agencies, into relational databases for the purpose of producing information for stories. In a classic case, a reporter might compare home loan mortgage refusals by census tract, thereby proving the existence of discrimination against certain minority groups.

Table 1.10 shows that the average U.S. daily used computers to analyze data in some way 2.7 times in the past year (s.d.=18.5). But only 75 respondents (23 percent) answered one or more for this question. Predictably, large newspapers are significantly higher users of this technique ($F_{(320,2)}$=15.506, $p < .0001$).

Table 1.11 shouws the number of times newspapers analyzed government data with nine-track tapes to produce stories in the past year. The average is 1.2 (s.d.= 8.3). Again, large newspapers show significantly higher usage of this technique ($F_{(320,2)}$=18.794, $p < .0001$).

Editors surveyed are not convinced that computer delivery of news will come quickly in their communities. The national average is 14 years (s.d.=31.8). Large newspapers, which are located in big cities, expect this to happen much more quickly (4.8 years), and medium-sized newspapers also are more optimistic (6.6 years) compared to small newspapers (17.8 years). Small newspapers are significantly different from the others in this respect ($F_{(241,2)}$= 7.286, p <

.001).

These results show that Hypothesis 1 was generally supported except in the number of hours for staff computer training (Table 1.9).

Table 1a shows that there was a significant difference between the different sizes of newspapers (X^2=19.024, p < .001). Therefore, the second hypothesis also was supported. More medium-sized newspapers adopted PCs than those in the other two groups, while more large newspapers adopted minicomputers (or still have them) than in the other two groups.

Table 1b shows a significant difference between the three groups of newspapers in terms of the computer-assisted reporting experience (x^2=151.235, p < .0001). Hence, Hypothesis 3 was supported. Ninety percent of the large newspapers have done some work in computer-assisted reporting while only 7 percent of the small newspapers have done so.

Questions 1-6

Table 2 lists the main motivations for newsroom computerization and what editors say are the most important improvements brought about by computers. Fifty-two percent of the respondents (N=330) listed productivity as the main reason for newsroom computerization. The second most frequent answer was cost savings (34 percent). But for large newspapers, cost savings was the most frequent answer (50 percent, n=41).

Table 3 shows that the most common function of newsroom computers is wire capture (96 percent, N=330). Sixty percent of the respondents said they use computers to handle assignment and story tracking. But large newspapers put more emphasis on newspaper libraries, electronic mail (85 percent, n=41), and remote access to external databases (80 percent).

Table 4 shows the regularly accessed external databases. CompuServe and Nexis/Lexis are the most frequently used (14 percent respectively, N=330). But large newspapers used Nexis/Lexis more than CompuServe (78 percent vs 39 percent, n=41). Large newspapers also used DataTimes, Vu/Text and Dow Jones News Retrieval (68 percent, 59 percent, and 41 percent, respectively) more than CompuServe.

Regression analysis

Extent of Computer-Assisted Reporting

A stepwise regression was used to ferret out the variables contributing to the extent that computer-assisted reporting was employed. This process produced nine predictor variables that are significant at the .05 level. They are internal ability to analyze data on nine-track tapes, subscription to America On-Line, use of the OS/2 operating system, computers capable of handling other functions, use of the Unix operating system, use of the Atex system, use of other brands of computers and ownership.

A multiple regression test of this model showed a significant F value of 32.68 at the .0001 level with an adjusted R square of .47. Internal ability to analyze data on nine-track tapes had the highest beta value (.62) and therefore is the most likely predictor of the employment of computer-assisted reporting techniques. Most of the other factors are capabilities most often associated with large newspapers, which have been leaders in this area. (Table 5).

Numbers of computer functions

Another model was built of the computer functions available in the newsroom. A stepwise regression showed that the following eight independent variables, significant at the .05 level, contributed to the dependent variable: external database use, using VAX computer technology, using the Macintosh operating system, using Vu/Text, adding staff because of computerization, using SII computers, primarily using PCs, minicomputers or mainframes, and using other operating systems.

A multiple regression test of this model showed a significant F value of 27.38 at the .0001 level. The adjusted R square was .39. The highest beta weight was related to the number of external databases in use. The two negative beta weights were adding staff because of computerization and primarily using PCs, minis or mainframes (Table 6).

Numbers of external databases

A third model used numbers of external databases as the dependent variable. The stepwise regression ferreted out seven predictor variables contributing to the numbers of external databases. They are circulation, hours of external database use in the past month, numbers of functions the computer handles, numbers of times computer-assisted reporting was done in the past year, staff size, limitations on accessing databases and male staff size.

The multiple regression test showed a significant F value of 70.88 at the .0001 level. The adjusted R square was .60. The highest beta weight was circulation. The lowest beta weight was the amount of computer-assisted reporting done. Male staff size, though it was a negative factor, was not significant in the model of multiple regression (Table 7).

Conclusions and Discussion

Three-hundred-thirty newspapers responded to this nationwide survey of computer use in daily newspaper newsrooms. Hypothesis 1 was generally supported, which means that small newspapers lag far behind large and medium-sized ones in newsroom computerization. While small papers may do word processing on computers, the equipment is used for little else, and there are 1,236 small daily newspapers in the United States, or 78 percent of the total. Table 1 shows that small newspapers made little use of external databases (mean=0.2 in Table 1.6) and did very little computer-assisted reporting (mean=0.2 and 0.0 in Tables 1.10 and 1.11). Further, small newspaper editors clearly have not come to grips with the information revolution. Evidence of this comes in their prediction that it will be 17.8 years on average before news is delivered electronically in their communities. This prediction is far more pessimistic than that of their counterparts at large and medium-sized papers.

Table 1a shows that personal computers have been widely adopted by newspapers (87 percent). Minicomputers and mainframe computers lag far behind (40 percent and 30 percent, respectively). With the ever-decreasing prices of PCs, this trend seems to be very natural. Small newspapers rely more on PCs than the other two groups because small newspapers' adoption of minicomputers was extremely low compared to the other two groups (29 percent vs. 60 percent and 83 percent). This trend bodes well for the survival of the small newspaper because PCs are much cheaper than other types of computers. If small newspapers use more and more PCs, their technology lag can be quickly reduced. Personal computers empower small institutions that cannot afford expensive equipment.

A previous study by Ward and Hansen pointed out that the adoption rate of PCs in large newspaper newsrooms (over 100,000 in circulation) was only 64 percent. That is far behind the 93 percent result in this study (Table 1a). That can be explained by the proliferation of PCs in large newspaper newsrooms in the intervening 2.5 years.[23] Between the snapshots taken in the two studies, many newspapers have purchased PCs, and some have even based their entire systems on PCs.

This study also found that 100 percent of the large newspapers surveyed used at least one external database regularly. This is even higher than the 90 percent suggested in Ward and Hansen's study.[24] That difference also may be explained by changes in the intervening 2.5 years. Most disappointing is the failure of small newspapers to embrace the use of external databases. Only 16 percent (n=222) of small newspapers said they regularly access at least one database, despite the widespread acceptance of the practice in both large newspapers and in leading textbooks on news writing.

Clearly, this study shows that a newspaper's ability to analyze nine-track mainframe tapes seems to be the most important factor in contributing to its adoption of computer-assisted reporting. Most government data sets are stored on nine-track tape. If one does not have a nine-track tape drive or knowledge of how to use one, it is difficult to conduct computer-assisted reporting.

One interesting finding is that the addition of staff members because of computerization contributes negatively (beta weights= -.12, $p < .01$) to the total computer number of computer functions used at the newspaper. It is not at all clear what that means, but it suggests that some newspapers do not use computers well and therefore perceive a need for more staff members. This notion requires further study.

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[23] Jean Ward and Kathleen A. Hansen, "Journalist and Librarian Roles, Information Technologies and Newsmaking," *Journalism Quarterly*, 68(3):494 (Fall 1991). Their study took place in the Spring of 1990 while our survey questionnaires were sent out in mid-July of 1992 and collected in early October 1992.

[24] Jean Ward and Kathleen A. Hansen, *op. cit.*, p.494.

The data also show that use of PCs helps newspapers make use of more computer functions. The smaller the computer, the more functions there will be. PCs are more versatile than minicomputers or mainframes, and the data reflect that reality.

As for factors affecting the number of external databases used, the most important factor was circulation of the newspaper (Beta weights= .52, $p < .0001$). External databases are quite expensive, so larger newspapers often are better able to afford them. Staff size also significantly contributed to external database use, again reflecting their use primarily by large papers. Compared to Busterna et al.'s study (Table 3, p. 736),[25] our model better explains why newspapers use more or fewer databases. Our sample contains small, medium and large newspapers, hence there is a better range of values for each variable. Busterna et al. used only large newspapers in their sample.

As noted in the previous section, the response rate for this survey was 20.8 percent, which is not high compared with the previous studies.[26] However, such a rate is quite acceptable for a national study of this type. Most of the earlier studies involved much smaller samples in which repeated efforts could be made to increase the return rate. Average circulation is 1.7 times higher than normal in this study, reflecting the relatively higher response rate of large newspapers. Therefore, care should be taken when trying to extrapolate the results.

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[25] John Busterna, Kathleen Hansen, and Jean Ward, "Competition, Ownership, Newsroom and Library Resources in Large Newspapers," *Journalism Quarterly*, 68(4):729-739, (Winter 1991).

[26] See, for example, Tsan-Kuo Chang, David Voelker, and Jae-won Lee, "Organizational Factors and Nonresponse in a Survey of Newspaper Editors," *Journalism Quarterly*, 67:732-739 (Winter 1990); Robert C. Kochersberger, Jr., "Postcard Questionnaire May Boost Response Rate," *Journalism Quarterly*, 64:861-863 (Winter 1987); J. Yu and H. Cooper, "A Quantitative Review of Research Design Effects on Response Rates to Questionnaires," *Journal of Marketing Research*, 20(1), 36-44.

The study suggests fertile grounds for further research. One question that begs answers is the matter of who is in charge of newsroom computing. We addressed our survey document to managing editors, who were asked to answer or pass along the document to the person best able to answer. In many cases, these appear to have been answered by "systems editors," production managers or other newsroom personnel. Whether the training and background of the key newsroom computer guru, or the top editor, makes a difference in adoption of technology is an intriguing question.

Table 1
Analysis of Variance
(Comparing the Means of Small, Medium, and Large Newspapers)[1]

	Total mean	Small (S)	Middle (M)	Large (L)
1. Years of computerization	11.7	10.9	13.2	14.3
2. # of PC terminals	15.8	8.6	20.6	48.2
3. # of minicomputer terminals	30.2	5.5	29.9	162.0
4. # of mainframe terminals	6.1	3.7	7.9	17.1
5. # of computer functions	5.0	3.9	6.8	8.0
6. # of external databases accessed regularly	0.8	0.2	1.2	3.4
7. # of hours using external dbases in the past month	13.7	1.4	7.6	90.9
8. % of employees getting computer training in newsroom	43.3	39.4	56.8	43.3
9. Hours training a newcomer to use computer systems	6.2	6.7	6.1	3.8
10.# of times using computers to analyze govt data and produce stories in the past year	2.7	0.2	2.5	17.1
11. # of times analyzing govt data in 9-track tapes to produce stories in the past year	1.2	0.0	0.5	8.2
12. In how many years will computer delivery of local news happen in your community	14.0	17.8	6.6	4.8

N=330
Small newspapers=222
Medium-sized newspapers=60

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[1] According to Melvin L. DeFleur and Everette e. Dennis *Understanding Mass Communication* (Boston: Houghton Miffin, 1988), p. 52, small dailies are those newspapers which have circulations under 50,000; middle-sized newspapers are those which have circulations between 50,000 and 100,000; large newspapers are those which have circulations above 100,000.

Large newspapers=41
Missing cases=7

1. $F_{(313,2)}= 13.508$, $p < .0001$ (S*M, S*L)
2. $F_{(310,2)}= 51.407$, $p < .0001$ (S*M, S*L, M*L)
3. $F_{(308,2)}=101.658$, $p < .0001$ (S*M, S*L, M*L)
4. $F_{(310,2)}= 4.517$, $p < .05$ (S*L)
5. $F_{(320,2)}= 56.954$, $p < .0001$ (S*M, S*L)
6. $F_{(320,2)}=181.117$, $p < .0001$ (S*M, S*L, M*L)
7. $F_{(320,2)}= 20.042$, $p < .0001$ (S*L, M*L)
8. $F_{(320,2)}= 3.317$, $p < .05$ (S*M)
9. $F_{(318,2)}= 1.274$, n.s. (No two groups are significantly different at the 0.05 level.)
10. $F_{(320,2)}=15.506$, $p < .0001$ (S*L, M*L)
11. $F_{(320,2)}=18.794$, $p < .0001$ (S*L, M*L)
12. $F_{(241,2)}= 7.286$, $p < .001$ (S*L, S*M)

(*) Denotes pairs of groups significantly different at the 0.05 level.

Table 1a
Computer Adoption Rate:
Newsrooms Having One Terminal or More

	Small		Medium		Large		Total	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
PCs	184	86	55	96	38	93	277	86
Minicomputer	62	29	33	60	33	83	128	40
Mainframe	69	32	18	31	9	23	96	30

X^2= 19.024, df= 4, p < .001

N=330
Small newspapers=222
Medium-sized newspapers=60
Large newspapers=41
Missing cases=7

Table 1b

Has your newspaper ever done computer-assisted reporting?

	Small		Middle		Large	
	Freq.	%	Freq.	%	Freq.	%
Yes	16	7	32	55	37	90
No	204	93	26	45	4	10
Total	220	100	58	100	41	100

X^2=151.235, df= 2, p < .0001
N=330
Missing=11

Table 2

Reason for Newsroom Computerization (in percent)

	Total %	Small % newspaper	Medium %	Large %
Main reason for newsroom computerization				
Productivity	52	58	44	37
Cost savings	34	30	40	50
Quality	9	8	9	13
Competition	1	1	---	---
Other	4	4	7	---
Most important improvement				
Productivity	71	76	61	67
Improved quality	19	18	22	17
Improved writing	4	3	6	8
Research access	3	---	11	8
Technical reliability	2	3	---	---

N=330
Small newspapers=222
Medium-sized newspapers=60
Large newspapers=41
Missing cases=7

Table 3

Functions of Newsroom Computers
(in percent)

	Total %	Small %	Medium %	Large %
Newsroom computer(s) handle				
Wire capture	96	94	100	100
Assignment and story tracking	60	52	77	78
Office management	44	36	65	56
Internal databases	39	27	62	66
Newspaper library	37	25	43	85
Document scanning	36	34	40	41
Electronic mail	35	21	52	85
Image scanning	35	29	52	44
Remote access to external databases	33	16	52	100
On-line style guide	28	17	48	63
Spreadsheets	25	18	43	34
Reading tapes	13	6	18	41
Fax transmission /reception	8	6	13	17
Other	9	9	10	7

N=330
Small newspapers=222
Medium-sized newspapers=60
Large newspapers=41
Missing cases=7

Table 4

External Databases Accessed Regularly
(in percent)

	Total %	Small %	Middle %	Large %
CompuServe	14	5	28	39
Nexis/Lexis	14	1	18	78
Vu/Text	13	1	22	59
DataTimes	12	0	18	68
Dow Jones News Retrieval	8	1	10	41
Prodigy	4	0	12	12
America On-Line	2	---	---	17
Other	12	9	15	29

N=330
Small newspapers=222
Medium-sized newspapers=60
Large newspapers=41
Missing cases=7

Table 5

Factors Affecting the Amount of Computer-Assisted Reporting: A Regression Analysis

Predictor variables	Beta weights
Internal ability to analyze data on nine-track tapes	.62****
Subscription to America On-Line	.19****
Using OS/2 operating system	-.18****
Computers handling other functions	.11**
Subscription to other databases	.10*
Using Unix operating system	-.11*
Using Atex computer	.09*
Using other brands of computer	.08
Ownership	.05

Multiple R	.69
R Square	.48
Adjusted R Square	.47
F Value	32.68****

*p < .05
**p < .01
***p < .001
****p < .0001

Table 6

Factors Affecting Computer Functions
A Regression Analysis

Predictor variables	Beta weights
Numbers of external databases	.27****
Using VAX operating system	.19***
Using Macintosh operating system	.18***
Using Vu/Text	.20**
Adding staff because of computerization	−.12**
Using SII computers	.11*
Primarily using PC, mini, or mainframe	−.12*
Using other operating system	.11*

Multiple R	.64
R Square	.41
Adjusted R Square	.39
F Value	27.38****

$^{*}p < .05$
$^{**}p < .01$
$^{***}p < .001$
$^{****}p < .0001$

Table 7

Factors Affecting the Numbers of External Databases
A Regression Analysis

Predictor variables	Beta weights
Circulation	$.52^{****}$
Hours of external database use	$.16^{****}$
Total computer functions	$.15^{***}$
Amount of computer-assisted reporting done	$.10^{**}$
Staff size	$.13^{*}$
Limitation on accessing databases	$-.13^{***}$
Male staff size	$-.11$

Multiple R	.78
R Square	.61
Adjusted R Square	.60
F Value	70.88^{****}

$^{*}p < .05$
$^{**}p < .01$
$^{***}p < .001$
$^{****}p < .0001$

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COMPUTER BULLETIN BOARD SYSTEMS AND THE FIRST AMENDMENT:
THE COMMON CARRIER SOLUTION

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Association for Education in Journalism and Mass Communication
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COMPUTER BULLETIN BOARD SYSTEMS AND THE FIRST AMENDMENT: THE COMMON CARRIER SOLUTION

I. Introduction

At the University of Massachusetts, students exchange articles about sexual bondage and view images of women hanging naked from trees.[1] In West Virginia and Texas, the Aryan Brotherhood Youth Movement compose a national list of suspected homosexuals for the stated purpose of beating them.[2] And in Santa Monica, California, residents lodge complaints about trash collection, potholes and parking problems.[3]

While seemingly unrelated, such examples of free expression have at least one thing in common: each represents a novel form of electronic speech that recently took place on one of the 40,000 computer bulletin board systems currently operating in the United States.[4] Referred to as "BBSs," these high-tech equivalents to supermarket message boards are the up-and-coming forum of electronic conversation.[5] BBSs facilitate instantaneous communication by enabling anyone with a personal computer and a modem to "post" messages, read replies, engage in debates, chat casually and share graphic images about topics ranging from politics, religion and sex to recipes and sports.[6] And in every part of the country, in growing numbers,[7] people from all walks of life are using these new-age computer conferencing forums to do just that.[8]

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[1] Don Oldenburg, *Rights on the Line: Defining the Limits on the Networks*, WASH. POST, Oct. 1, 1991, at E5. *See also*, Wyng Chow, *Transmission of Pornography Disturbs Universities*, VANCOUVER SUN, July 3, 1992, at A9.

[2] Robert L. Jackson, *Child Molesters Use Electronic Networks*, L.A. TIMES, Oct. 1, 1989, at 20.

[3] Neal R. Peirce, *City Hall in the Mall: High-Tech Democracy?*, NAT'L J., Sept. 2, 1989, at 2158.

[4] Robert B. Charles, *The Brave New World of On-Line Libel Law*, CONN. L. TRIB., Jan. 13, 1992, at 19; Marc Silver, *Action on the Boards*, U.S. NEWS & WORLD REPORT, Nov. 18, 1991, at 96. The 40,000 figure is the most widely quoted estimate on the number of bulletin boards, but it has been suggested that there may be as many as 60,000. See Amy Harmon, *New Legal Frontier*, L.A. TIMES, Mar. 19, 1993, at A1. This number is up from 13,500 boards in 1990. Silver, *supra*, at 96. What is more, with decreasing costs and increasing public interest, the number of boards is likely to continue growing at a rapid rate. *See id*, and D. C. Denison, *Navigating On-Line America*, BOS. GLOBE MAG., Mar. 21, 1993, 23.

[5] Don Oldenburg, *The Law: Lost in Cyberspace*, WASH. POST, Oct. 1, 1991, at E5.

But just as the popularity of computer bulletin board systems is proliferating, so is the controversy surrounding their use.[9] Increasingly, BBS operators are pre-screening and censoring "controversial" speech on their networks.[10] Such censorship has triggered a heated debate about the extent to which the First Amendment protects speech on BBSs.[11] To date, there is no legislation and no cases directly addressing the scope of First Amendment protection for these chatty networks.[12] Consequently, the debate over First Amendment protection for BBSs is gaining momentum, as computer experts, lawyers and legal scholars scramble to define what a system of electronic bulletin boards really is.[13]

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[6] Oldenburg, *supra* note 5, at E5; Silver, *supra* note 4, at 96.

[7] Rosalind Resnick, *The Outer Limits*, NAT'L L.J., Sept. 16, 1991, at 33. Internet, the biggest computer network in the world, links millions of people through more than 750,000 "host" connections. Peter Moon, *Network Sex: Is Increasingly Explicit Material on Some Computer Bulletin Boards Free Speech, or Obscenity?*, GLOBE AND MAIL, July 20, 1992, at 10. For the past two years, the number of Internet users has been growing at a rate of 20% a month, according to California's Stanford Research Institute. *Id.* Additionally, today, 3 million U.S. households are hooked up to on-line information services--up from 500,000 four years ago. Evan I. Schwartz, *Putting the PC Into Politics*, BUSINESS WEEK, March 16, 1992, at 112. Moreover, an estimated 60 million Americans have the capability, if desired, to log on to an on-line bulletin board service from work or from home. John Schwartz, *Sex Crime on Your Screen*, NEWSWEEK, Dec. 23, 1991, at 66.

[8] The variant examples of communications taking place on computer bulletin boards are nearly endless. *See, e.g.*, Terry Carter, *Grapevine Bytes*, NAT'L L.J., July 3, 1989, at 4 (computer bulletin board established to facilitate communication between law reviews and moot-court programs); Lou Dolinar, *From the Gulf: High-Tech Gossip About the War*, NEWSDAY, Jan. 29, 1991, at 59 (computer bulletin board systems used to communicate about the Persian Gulf war); Shane Dubow, *The Unofficial Collegiate Sex Quiz*, PLAYBOY, July, 1992, at 15 (computer bulletin board used to take sex survey); E. Schwartz, *supra* note 7, at 112 (political bulletin boards used as campaign medium and as way to bring citizens into political process); J. Schwartz, *supra* note 7, at 66 (computer bulletin boards used to talk about sex and trade obscene or pornographic pictures).

[9] Felicity Barringer, *Electronic Bulletin Boards Need Editing. No They Don't*, N.Y. TIMES, March 11, 1990, at 4; W. John Moore, *Taming Cyberspace*, NAT'L J., March 28, 1992, at 745.

[10] *See, e.g.*, Barringer, *supra* note 9, at 4; Charles Leroux, *Hate Speech Enters Computer Age*, CHIC. TRIB., Oct. 27, 1991, at 4; Moon, *supra* note 7, at 10; Oldenburg, *supra* note 1, at E5; Sandra Sugawara, *Computer Networks and the 1st Amendment: Advanced Technology Raises New Questions and Concerns About an Age-Old Issue*, WASH. POST, Oct. 26, 1991, at A12.

Inevitably, and soon, courts will be forced to directly address the scope of First Amendment protection for speech on computer bulletin board systems.[14] When they do, it is important that courts extend to BBS speech the greatest level of First Amendment protection available for the medium. Such protection is crucial, because "as forums for debate and information exchange, computer bulletin boards support some of the most vigorous exercise of First Amendment freedoms of expression that this country has ever seen."[15] In fact, computer bulletin board systems promise to replace other more traditional media as a forum for expressing ideas in the twenty-first century.[16] How speech on these systems is regulated, therefore, will have tremendous implications for the future of free expression in our country.[17]

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[11] *See, e.g.*, Philip Elmer-Dewitt, *Cyberpunks and the Constitution*, TIME, Apr. 8, 1991, at 81; Leroux, *supra* note 10, at 4; Moon, *supra* note 7, at 10; Sugawara, *supra* note 10, at A12.

[12] Charles, *supra* note 4, at 19 (litigation in the area of computer bulletin boards is "complex and uncharted"); Moore, *supra* note 9, at 745 (government policy has lagged far behind computer technology and scope of First Amendment protection for speech over computer bulletin boards is a "tricky issue"); Harmon, *supra* note 4, at A1 ("there's virtually no legal precedent governing the operation of electronic bulletin boards, say Shari Steele, an attorney for the Electronic Frontier Foundation"). So great is the gap between traditional legal doctrines and new technologies such as the computer bulletin board, that noted constitutional legal scholar and professor, Laurence Tribe, recently proposed an amendment to the United States Constitution to better guarantee First Amendment and other constitutional rights threatened by computer technology. *See* Oldenburg, *supra* note 5, at E5; Resnick, *supra* note 7, at 33. Even as early as 1988, the congressional Office of Technology Assessment recognized in a report the need to re-examine the meaning of First Amendment rights in light of technological advances such as electronic bulletin boards. *Communications, OTA Study Urges Re-Examination of First Amendment Rights*, BNA, Feb. 1, 1988, DER No. 20.

[13] Moore, *supra* note 9, at 745; Sugawara, *supra* note 10, at A12.

[14] Michael L. Taviss, Note, *Dueling Forums: The Public Forum Doctrine's Failure to Protect the Electronic Forum*, 60 CINCINNATI L. REV. 757, 758 (1992).

Complicating the issue is the fact that the lines between private and public are increasingly becoming blurred.[18] Currently, there are both publicly owned and privately owned computer bulletin board systems. Internet, a government sponsored research and education network, contains the world's largest collection of "public" bulletin board systems.[19] In contrast, Prodigy Services Co., a joint venture of IBM and Sears Roebuck & Co., operates one of the most popular private personal computer networks in the United States.[20] Arguably, under traditional First Amendment analysis, private systems like Prodigy demand a lower level of First Amendment protection than public systems like Internet; while a publicly supported system like Internet is subject to constitutional guarantees, privately owned systems like Prodigy generally are not.

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[15] Mitchell Kapor, *Civil Liberties in Cyberspace: Computers, Networks and Public Policy*, SCIENTIFIC AMERICAN, Sept., 1991, at 158. Indeed, experts predict that most information related activities, including expressive activities, will take place in the future over the computer. *See*, Kapor, *supra*, at 158; Taviss, *supra* note 14, at 758 n.8.

[16] Elizabeth Sanger & Joshua Quittner, *Prodigy Computers: Electronic Insults Flap*, NEWSDAY, Oct. 23, 1991, at 4 (quoting Jerry Berman, director of ACLU Information Technology Project).

[17] Concern over the free speech implications of electronic communications spurred computer legend Mitchell Kapor--founder of Lotus Development Corp.--and Grateful Dead songwriter John Barlow to form the Electronic Frontier Foundation (EFF) in 1990 for the purpose of, among other things, tracking 1st Amendment protections for computer bulletin boards. Carol Matlack & W. John Moore, *From the K Street Corridor*, NAT'L J., Jan. 18, 1992, at 164.

[18] *See* Oldenburg, *supra* note 5, at E5; Taviss, *supra* note 14, at 791.

[19] Edward R. Kozel, *Commercializing Internet: Impact on Corporate Users*, TELECOMM., Jan. 1992, at S11. Internet connects over one million people worldwide. *Id.*

[20] *Prodigy Network in Anti-Semitism Row*, FACTS ON FILE WORLD NEWS DIGEST, Oct. 31, 1991, at 823 C2.

Under such an analysis, censorship on private networks--like Prodigy--is arguably legal. Censorship on public networks, is arguably not. Yet, because *both* private and public BBSs are evolving rapidly into large-scale public information and communication utilities, the private/public distinction between these two types of systems is not so clear.[21] Indeed, pioneers in electronic networking view large private BBSs as the forerunners of a public computer network that will connect people across the nation.[22] Without question, the protection afforded speech on both public *and* private systems, therefore, will have great implications for the future of free speech in this country.[23] Because of their shared status as public information services, then, public and private BBSs should be subject to the same constitutional restrictions.

This paper examines the extent to which the First Amendment should protect speech on computer bulletin board systems. Because distinctions between public and private are converging, the paper addresses the application of First Amendment doctrine in the context of both public and private BBSs. Section II describes the general nature of computer bulletin board systems and outlines the controversy surrounding their use. Section III discusses the common carrier media model in comparison with computer bulletin boards in an effort to assess the level of First Amendment protection BBSs should receive. Finally, section IV proposes common carrier status for computer bulletin boards. This section concludes that such treatment provides BBS users with the greatest level of free speech protection, thereby fostering the greatest amount of free expression over this increasingly important medium.

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[21] Kapor, *supra* note 15, at 158; Taviss, *supra* note 14, at 795.

[22] Elmer-Dewitt, *supra* note 11, at 81; Kapor, *supra* note 15, at 158. At this writing, the Clinton Administration appears prepared to propose legislation that would create an "information highway" linking computers across America. *Nationwide 'Information Highway' Would Link Country's Computers*, CHRONICLE OF HIGHER EDUCATION, Feb. 24, 1993, at A25. Although President Clinton has not disclosed how much he proposes to spend on the National Research and Education Network (NREN) previously approved by Congress, it is expected that he will pledge financial support for this high-speed successor to the Internet system. NREN, a national, high-speed computer network would connect millions of computer users at colleges, universities, federal laboratories, libraries, hospitals and businesses in every state. *OTA Raising Flags: National Research Network Driven By Differing Goals and Visions*, COMMUNICATIONS DAILY, *June 5, 1991, at 2.*

[23] *See*, John Markoff, *Home-Computer Network Criticized For Limiting Users*, N.Y. TIMES, Nov. 27, 1990, at D1 (quoting Jerry Berman, director of the A.C.L.U.'s Information Technology Project) (regulation of speech on systems like Prodigy has important implications for free speech over all electronic forums).

II. Overview of Computer Bulletin Board Systems

Computer bulletin board systems have been likened to back-yard fences,[24] eighteenth century french salons,[25] convention centers,[26] college dormitory message boards[27] and electronic soapboxes.[28] As a medium of instantaneous communication connecting people all over the country, BBSs can be thought of as all of these things--and more. The following section discusses what a computer bulletin board is, how individuals access and use them, and what speech is and isn't taking place on them.

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[24] Oldenburg, *supra* note 1, at E5.

[25] Barringer, *supra* note 9, at 4.

[26] Oldenburg, *supra* note 5, at E5.

[27] Silver, *supra* note 4, at 96.

[28] Eric C. Jensen, *An Electronic Soapbox: Computer Bulletin Boards and the First Amendment*, 39 FED. COMM. L.J. 217 (1987); Oldenburg, *supra* note 5, at E5.

A. The Nature of Computer Bulletin Board Systems

A computer bulletin board system is an interactive computer communication service operating over a larger computer network.[29] In the United States, both private and public computer networks operate computer bulletin board systems.[30] Generally, national information services, such as Prodigy, CompuServe, GEnie and America Online, operate private BBSs.[31] In contrast, federal, state and local governments fund *public* BBSs, such as those existing on Internet.[32]

At a basic level, setting up a BBS is a relatively simple and inexpensive endeavor.[33] Establishing a BBS requires at least one computer with a capacity to store information, a "host" program that controls the computer and a modem through which to access and receive information via telephone or other communication lines.[34] The baseline cost for establishing a useful BBS is approximately $1000, although the establishment of a substantial commercial service requires a far larger investment.[35]

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[29] Loftus E. Becker, Jr., *The Liability of Computer Bulletin Board Operators For Defamation Posted By Others*, 22 CONN. L. REV. 203, 207 (1989).

[30] Taviss, *supra* note 14, at 762-766 (1992). Some individuals operate BBSs focusing on a particular hobby or interest. *Id.* Consequently, BBSs range in size from small systems run on personal computers to large commercial services run on powerful mainframes. *Id.* This paper, however, primarily focuses on large BBSs.

[31] *See*, Sugawara, *supra* note 10, at A12.

[32] Internet is sponsored by the National Science Foundation and Department of Defense. Taviss, *supra* note 14, at 763. Internet is an assemblage of nationwide interconnected computer networks originally established for the purpose of exchanging academic and scientific information. Peter Moon, *Network Lets Users Say What They Think*, GLOBE AND MAIL, July 20, 1992, at 13. In recent years, however, Internet's content has expanded to include the world's greatest collection of bulletin board systems covering all kinds of topics. Kozel, *supra* note 19, at S11. Moreover, Internet is becoming increasingly available at non-academic places of work and through private companies that make access available to the public for relatively modes fees. Moon, *supra* note 7, at 10. Another example of a public, government sponsored BBS is Santa Monica, California's Public Electronic Network ("PEN"). Pierce, *supra* note 3, at 2158.

[33] Robert Beall, Note, *Developing A Coherent Approach to the Regulation of Computer Bulletin Boards*, 70 COMPUTER/L.J. 499, 501 (1987).

[34] Becker, *supra* note 29, at 207.

B. Using Computer Bulletin Board Systems

Using a BBS is even simpler than setting one up.[36] To communicate on a computer bulletin board system a user merely needs a terminal connected to a modem (for modulator-demodulator), a telecommunications program, and the information necessary to "log on" to the service--such as a phone number, a user name and a private access code.[37] Because most BBSs are designed to accommodate the general public, the procedure for gaining access is relatively straightforward.[38] A user turns on his or her computer and "calls" the BBS by dialing the appropriate telephone number via a modem.[39] The BBS automatically answers the telephone after it rings, thereby connecting the user's computer to the system's central computer.[40] Once the two computers are linked, a user must affirmatively select and access a particular board on the system, from which the user can scan and read "posted" messages left by others or "post" messages for other board users to read.[41] Users may "post" to the board for anyone to read, or they may direct their messages to a specific person.

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[35] *Id.*

[36] *See*, Beall, *supra* note 33, at 500.

[37] Becker, *supra* note 29, at 210; Denison, *supra* note 4, at 10; Robert Charles, Note, *Computer Bulletin Boards and Defamation: Who Should Be Liable? Under What Standard?*, 2 J. L. & TECH. 121, 124 (1987).

[38] For an in depth description of the process of logging on to a BBS, see Beall, *supra* note 33, at 499.

[39] Beall, *supra* note 33, at 499.

[40] *Id.*

The process of selecting which "posted" messages to read is very user directed. A typical bulletin board system is divided into major subject groupings, or individual boards, known as "news groups."[42] In turn, depending on the system, each news group may be divided by topic.[43] To read a message, a user has to first select the news group, and then select each note within the news group that the user wishes to read.[44] Typically, a user chooses a particular note by tabbing to a check box and typing an "X" next to the selected note heading.[45]

While the costs for using BBSs vary with the type of service, access to all systems is relatively inexpensive for someone who owns a personal computer and a modem.[46] In the case of commercial services, an individual must purchase the software required to access the system[47] and pay a subscription for the commercial network.[48] In the case of a public service, like

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[41] *Id.* Users who read without participating in the discussion are called "lurkers."

[42] *See*, Moon, *supra* note 7, at 10. Individual boards are also called "areas." Tom Sherman, *The Prodigy Service: A Glimpse of the Future*, LINK-UP, May 1990, at 24.

[43] Sherman, *supra* note 42, at 24.

[44] *Id.*

[45] *Id.*

[46] To use Prodigy, for example, a user can use virtually any computer with a limited RAM memory. *See*, Pat Ensor, *Prodigy: Bellweather or Pariah*, ONLINE, July 1991, at 61.

[47] The software required to access Prodigy, the largest commercial BBS marketed to home computer users, is $49.95. Ensor, *supra* note 46, at 61. The software, however, is often available free. *Id.*

[48] Subscription fees for typical commercial BBSs cost between $20 and $100 a year. Silver, *supra* note 4, at 96. Subscription costs to Prodigy are a fixed monthly price of $12.95 for monthly subscribers, $9.95 per month if paid annually, plus 25 cents per electronic mail message after the

Internet, communication is usually free for individual users accessing the system from a participating academic institution.[49]

C. The Censorship Controversy

The instantaneous nature of communication on BBSs, coupled with low start up costs, ease of use and minimal membership fees have all contributed to the increased popularity of these systems. Currently, there are 40,000 BBSs in the United States, covering just about every topic imaginable.[50] There are boards for U.F.O. enthusiasts,[51] Fortune 500 executives,[52] politicians[53] and even law students.[54] Not surprisingly, there are also boards for users with non-mainstream or "fringe" interests in mind. Today, it is these kinds of boards which are growing in numbers and gaining in popularity on both public and private systems.[55]

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first 30 messages each month. Ensor, *supra* note 46, at 61. For a description of the rate structures for the top four commercial BBSs see J. Schwartz, *supra* note 7, at 66.

[49] Increasingly, however, users can buy into Internet through a commercial seller of access to the system. Moon, *supra* note 7, at 10. A user can buy a year's access to Internet for as little as $99. *Id.*

[50] Silver, *supra* note 4, at 96.

[51] *Anti-Matter: UFO Update*, OMNI, Apr. 1986, at 95.

[52] *The Chief Executive Bulletin Board*, PERSONAL COMPUTING, Nov. 1985, at 77.

[53] E. Schwartz, *supra* note 7, at 112.

[54] Carter, *supra* note 8, at 4.

[55] *See*, Moon, *supra* note 7, at 10. On Internet, the sex news groups, for example, are extremely popular. A survey by DEC Network Systems Laboratory, of Palo Alto, California, of more than 1,500 news groups in April 1992 found that three of Internet's sex bulletin boards were among the 10 most looked at in the world. *Id.* A similar survey by *Boardwatch*, a computer magazine, found that three of the most popular bulletin boards advertised themselves as "adult," including one, The Pleasure Dome, which, "among other things, offers access to the following networks: ThrobNet, SwingNet, GonzoNet, StudNet, and KinkNet." Denison, *supra* note 4, at 23. Another controversial news group growing in popularity on Internet is a neo-Nazi board responsible for starting a group called Holocaust Revisionism. *Id.*

The speech on these fringe boards is controversial, to say the least. Take, for example, one of Internet's sex bulletin boards called "alt.sex.bondage."[56] On any given day, readers can find graphics and stories involving bestiality, incest, involuntary bondage and the sexual torture, rape and murder of women.[57] Or take, as another example, America Online's "People Connection" board, on which readers swap graphics of people engaged in sexual acts.[58] As a final example, consider the anti-Semitic speech appearing on Prodigy's BBS, berating Jews, praising Hitler and questioning whether the Holocaust really happened.[59]

Understandably, BBS operators are troubled by what to do about such controversial speech. While some operators have decided to leave their boards alone, others have responded with censorship.[60] The largest commercial BBS, Prodigy, has won the reputation for engaging in the most extensive screening and censoring of messages.[61] To this end, Prodigy has established guidelines to prohibit what it determines is, in its sole discretion, "offensive" material.[62] Prodigy defines "offensive" as "grossly repugnant to community standards" and including "blatant expressions of bigotry, racism and hate."[63] According to Prodigy, such standards preserve its "family-oriented" service by ensuring parents that their children can read anything posted on its boards.[64]

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[56] *See*, Moon, *supra* note 7, at 10.

[57] Moon, *supra* note 7, at 10. Among the pictures appearing recently on alt.sex.bondage was a photograph of a woman having sexual intercourse with a dog. *Id.*

[58] J. Schwartz, *supra* note 7, at 66.

[59] George DeWan, *Newsday Student Briefing Page on The News*, NEWSDAY, Nov. 14, 1991, at 22. One message, said in part, "Remove the Jews and we will go a long ways toward avoiding much trouble." Sanger & Quittner, *supra* note 16, at 4.

[60] Sugawara, *supra* note 10, at A12.

[61] *Anti-Semitism Row*, *supra* note 20, 823 C2.

[62] *Id.*

Via a membership agreement, all Prodigy users are notified of these standards.[65] To guard against abuses, however, Prodigy's central computer is programmed to screen out certain "offensive" words.[66] In addition, Prodigy "systems operators," or "SYSOPS," review each message sent to a Prodigy board before posting the message for the public.[67] These SYSOPS return any notes containing obscene words to the sender with a comment stating why the note was rejected.[68]

The examples of speech censored by Prodigy SYSOPS are varied; some are arguably curious in light of the "offensive" standard. Messages seeking the least painful methods of suicide, requesting pornographic contacts and providing instructions for illegally hot-wiring a cable connection represent a few examples of transmissions thwarted by Prodigy SYSOPS.[69] Additionally, in 1990 Prodigy censored and ultimately terminated a group of subscribers for using Prodigy's boards to protest a planned rate increase.[70] According to Prodigy, these users were "harassing" other members with protest mail.[71] In 1989 Prodigy shut down an entire board called "Health Spa," a news group that included frank discussions of gay sexual practices and featured a debate between homosexuals and fundamentalist Christians.[72] Earlier this year, Prodigy shut down another board, "Frank Discussion," after it "evolved into a place full of explicit descriptions of sexual acts and open sexual solicitations."[73]

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[63] *Id.*

[64] Sherman, *supra* note 42, at 24.

[65] Leroux, *supra* note 10, at 4. The agreement, to which all Prodigy applicants must sign before they are given access to the system, reads:

> Members agree not to submit, publish, or display on the Prodigy service any defamatory, inaccurate, abusive, obscene, profane, sexually explicit, threatening, ethnically offensive, or illegal material. Prodigy reserves the right to review and edit any material submitted for display or placed on the Prodigy service . . . and may refuse to display or remove from the service any material that it, in its sole discretion, believes violates this agreement or is otherwise objectionable.

Peter H. Lewis, *On Electronic Bulletin Boards, What Rights Are At Stake?*, N.Y. TIMES, Dec. 23, 1990, at 8.

[66] Leroux, *supra* note 10, at 4.

[67] Sherman, *supra* note 42, at 24. Prodigy SYSOPS pre-screen about 100,000 messages weekly before letting them run on the system. Sugawara, *supra* note 10, at A12.

[68] Sherman, *supra* note 42, at 24.

GEnie, the third-largest commercial BBS, owned by General Electric, is also known for its censorship practices.[74] GEnie employs 120 outside contractors to work from their homes for the purpose of monitoring specific GEnie bulletin boards.[75] These people determine what is obscene, indecent, offensive, defamatory, abusive, harassing or inconsistent with decorum and good taste--all speech that is banned on GEnie boards.[76]

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[69] Oldenburg, *supra* note 5, at E5.

[70] Markoff, *supra* note 23, at D1.

[71] Evelyn Richards, *Dissident Prodigy Users Cut Off From Network*, WASH. POST, Nov. 3, 1990, at C1.

[72] Moore, *supra* note 9, at 745; and Lewis, *supra* note 65, at 8.

[73] *Prodigy Blasted for Pulling Plug on X-Rated Bulletin Board*, GANNETT NEWS SERVICE, Jan. 28, 1993 (quoting Steve Hein, a company spokesman). See also *Prodigy On-Line System Dumps Sex Bulletin Board*, SAN FRANCISCO CHRONICLE, Jan. 30, 1993, and *Sex Talk Prompts Prodigy to Shutter Bulletin Board*, CHICAGO TRIBUNE, Feb. 1, 1993, p. 2.

[74] Sanger & Quittner, *supra* note 16, at 5; Sugawara, *supra* note 10, at A12.

[75] Sugawara, *supra* note 10, at A12.

[76] *Id.*

Finally, H&R Block Inc.'s CompuServe--the second largest commercial BBS--takes a less drastic approach with respect to managing its boards. It permits all messages to be posted and intervenes only when other users complain.[77] After receiving a complaint, CompuServe generally removes the message and admonishes the sender via both electronic and postal mail.[78] Additionally, CompuServe avoids major censorship controversies by maintaining different bulletin boards for different user interests and regulating the speech therein.[79] For example, CompuServe does not allow graphically sexual messages to be posed anywhere but on its human sexuality board.[80]

In contrast to Prodigy, GEnie and CompuServe, other networks take a hands-off approach with regard to regulating speech on their systems.[81] Thus, smaller systems like Meta Net, America Online, and The Well (Whole Earth "Lectronic Link") exercise no affirmative censorship policy.[82] Instead, such BBSs rely on their community of users to do whatever self-policing they wish.[83] Under this approach--termed the "white corpuscle effect"--users respond to controversial or offensive speech with more speech.[84] Often times on these systems, the sender of "offensive" speech becomes the object of *ad*

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[77] Lewis, *supra* note 65, at 8.

[78] *Id.* A subscriber may be kicked off for a particularly flagrant abuse. *Id.*

[79] Oldenburg, *supra* note 1, at E5.

[80] *Id.*

[81] *Id.*

[82] *Id.*

[83] *Id.*

[84] *Id.*

hominem attacks from other users--a process known as "flaming."[85] The idea behind both flaming and the white corpuscle effect is that offensive speech will find its proper antidote in more speech.

Like the smaller commercial systems, Internet also maintains a policy of no censorship on its boards.[86] While some computer groups on Internet, primarily the academic and scientific, have a voluntary system of modified censorship, most have none at all.[87] Instead, Internet alerts its users to the potentially offensive nature of certain boards by naming the boards accordingly.[88] Thus, "alt"--signalling "alternative"--precedes all of Internet's sex boards.[89]

Notably, pressure to censor objectionable speech is beginning to build even in the public sector. Recently, some groups have started to complain that Internet should censor speech on its "alternative" news groups.[90] These news groups deal with subjects ranging from hobbies and sexual lifestyles to illegal drugs and racism.[91] The pressure to censor such speech is largely a function of the fact that Internet is growing more widely available to the general public.[92] As access to Internet becomes more common place, and people grow more innovative in its use, others have taken objection with the resulting explosion of speech.[93] Thus far, despite mounting pressures, Internet has not succumbed to the criticism and refuses to censor speech on its boards.[94]

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[85] *Id.*

[86] Moon, *supra* note 7, at 10.

[87] *Id.*

[88] *Id.*

[89] *Id.*

[90] Chow, *supra* note 1, at A9; Moon, *supra* note 7, at 10.

[91] Moon, *supra* note 7, at 10.

[92] *Id.*

In sum, all major commercial BBSs reserve the right to censor messages over their boards, although each operator differs with respect to its policy.[95] In contrast, many smaller commercial boards along with Internet do not censor their boards. In view of the increasing unrest surrounding speech on Internet's networks, however, it may only be a matter of time before Internet and other systems jump on the censorship bandwagon.

D. The Case Against Censorship

The importance of computer bulletin board systems as a medium of communication cannot be overstated. In many ways, BBSs have become the common person's printing press of the twentieth century. Today, as a practical matter of cost, mediums such as television and radio are unavailable to the average person seeking to disseminate a message. Yet, for the low cost of a subscription fee, computer bulletin board systems provide millions of individuals with a cheap, effective and instantaneous way to get their message across to a large audience that may be composed of thousands or even hundreds of thousands of people.[96]

What is more, the future promise of BBSs as a method of communication cannot be ignored. Some see BBSs as a way to facilitate a new type of participatory democracy.[97] Others see them as new-age village greens, where people can air their gripes or voice their opinions in public or semi-public forums.[98] Still others predict that before the next century, BBSs will serve as the main conduit for commerce, education and entertainment in the United States.[99] In short, computer bulletin board systems promise to play a vital role in the dissemination of political and social speech in this country.

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[93] *Id.*

[94] *Id.*

[95] *See*, Sugawara, *supra* note 10, at A12.

[96] Sanger & Quittner, *supra* note 16, at 5.

In view of this role, the evil in allowing BBS operators to act as the arbiters of offensive speech becomes self-evident. First, such a practice of censorship permits the conformist impulses of BBS operators to establish and enforce the societal standard of what is and is not "offensive." Such an imposition of majoritarian values runs the risk of suppressing the ideas and feelings of those who wish to express themselves in nonconformist ways. Thus, the First Amendment cannot allow the determination of what is "offensive" to be made by a powerful few. As the Supreme Court stated in *Erznoznik v. Jacksonville*, "[m]uch that we encounter offends our esthetic, if not our political and moral sensibilities. Nevertheless, the Constitution does not permit the government to decide which types of otherwise protected speech are sufficiently offensive to require protection for the unwilling . . . viewer."[100]

Second, and more importantly, the evil in allowing BBS operators to continue censoring BBS speech is that such a practice is tantamount to a prior restraint on BBS users' freedom of expression. In the United States, there has long been a constitutional tradition against measures like censorship that prevent the free dissemination of ideas.[101] In 1931, in the landmark decision of *Near v. Minnesota*, the United States Supreme Court made concrete this general principle of First Amendment law prohibiting the use of previous restraints on speech.[102] As a result of *Near* and its progeny, today, any system of prior restraints on expression comes to the Court with a heavy presumption against its constitutional validity.[103]

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[97] E. Schwartz, *supra* note 7, at 112.

[98] Kapor, *supra* note 15, at 158; Sanger & Quittner, *supra* note 16, at 5.

[99] Kapor, *supra* note 15, at 158.

[100] 422 U.S. 205, 210-11 (1975).

Our legal system rightly rejects prior restraints on speech in preference for post facto penalties for a variety of reasons.[104] First, prior restraints punish communicators for disseminating messages irrespective of whether the sender would be subject to a post facto penalty for the same behavior consistent with First Amendment.[105] Second, prior restraints permanently deprive potential receivers of a censored message the opportunity to hear and evaluate the speech for themselves.[106] Even if the message is eventually released, when timeliness of the message is a consideration, the delay that results may have the equivalent of outright suppression.

In view of these concerns, it is clear that the censorship of BBSs constitutes a prior restraints on users' right to free speech. Such censorship punishes BBS users by frequently suppressing otherwise protected speech. Additionally, such censorship deprives potential audience members of the chance to hear and evaluate the censored message. For these reasons, censorship on computer bulletin boards must be eradicated.

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[101] *See, e.g.*, New York Times Co. v. U.S., 403 U.S. 713 (1971); Bantam Books, Inc. v. Sullivan, 372 U.S. 58, 70 (1963); Kunz v. New York, 340 U.S. 290 (1951).

[102] 283 U.S. 697 (1931). For a revealing discussion of the implications of *Near v. Minnesota* see generally FRED W. FRIENDLY, MINNESOTA RAG: THE DRAMATIC STORY OF THE LANDMARK SUPREME COURT CASE THAT GAVE NEW MEANING TO FREEDOM OF THE PRESS (1982).

[103] *New York Times*, 403 U.S. at 715; *Bantam Books*, 372 U.S. at 70.

[104] FRANKLYN S. HAIMAN, SPEECH AND LAW IN A FREE SOCIETY 397-98 (1981).

[105] *Id.* at 397.

[106] *Id.* at 397-98.

III. A New Approach to BBSs

Arguably, a lack of guidance from legislatures and the judiciary is the primary reason behind BBS censorship; understandably, BBS operators suppress--and will continue to suppress--certain speech because they fear liability for the offensive statements of others. Presently, there are no cases that directly address the First Amendment rights for computer bulletin board users.[107] There is, however, one case that addresses the scope of liability for a BBS operator in the limited context of a libel suit.[108] In 1991, in *Cubby Inc. v. CompuServe Inc.*, the United States District Court for the Southern District of New York held that CompuServe was not directly liable for third parties' alleged defamatory statements carried on its bulletin board, Rumorville USA.[109] The *CompuServe* court analogized CompuServe to a public library, bookstore or newsstand incapable of feasibly examining every publication for potentially defamatory statements.[110] Thus, the court reasoned, CompuServe should be held to the "knowing" standard of liability applicable to a distributor.[111] Under this standard, CompuServe would be liable only if the plaintiffs could show that CompuServe "knew or had reason to know" of the challenged Rumorville statements.[112] In finding that the plaintiffs had not met this burden, the *CompuServe* court granted summary judgment on the libel claim in favor of CompuServe.[113]

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[107] The only case to directly address the applicability of the First Amendment to computer bulletin board systems, *United States v. Neirdoff*, ended in a mistrial after the government dropped its charges on the fifth day of trial. Richard Karpinski, *Charges Dropped Against Alleged BellSouth Hacker*, TELEPHONY, Aug. 6, 1990, at 12.

[108] *See* Cubby, Inc. v. CompuServe, Inc., 776 F. Supp. 135 (1991).

[109] *Id.* at 141.

[110] *Id.* at 140.

To the extent that *CompuServe* protects the BBS operator from liability, the case is mildly encouraging. *CompuServe,* however, leaves many important questions unanswered regarding the general applicability of the First Amendment to BBS speech. Indeed, *CompuServe* does not address the questions of whether a BBS user has a First Amendment right to post messages on a computer bulletin board system and whether a BBS operator can pre-screen and censor messages over its boards consistent with the First Amendment. *CompuServe* only states that an operator is not liable for what it *chooses* to carry. Additionally, legal experts caution that *CompuServe's* ruling protects BBS operators only from *libel* suits; the decision may have little impact on broader free speech issues.[114]

In light of the existing censorship and mounting controversy surrounding BBSs it is not unlikely that courts will have to address these broader issues soon. Given the already prominent and increasing role computer bulletin boards play in this country's exercise of free speech, the precedents that courts set will have tremendous implications for the future of freedom of expression. Thus, every effort should be made to provide the greatest level of protection to speech that takes place over BBSs. Yet, if censorship such as that exercised by Prodigy becomes the rule, there is reason for great concern; instead of establishing a speech-expanding precedent, such a rule would severely limit BBS speech and infringe upon users First Amendment rights.

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[111] *Id.* at 140-41.

[112] *Id.* at 141.

[113] *Id.* at 141.

[114] Moore, *supra* note 9, at 745.

In the face of this threat, a workable legal framework promising broad protection for user speech is needed. Ideally, this framework would forbid BBS operators from censoring its boards while providing a reciprocal shield to liability. In this section, this paper argues that a common carrier model provides such a framework, securing for the BBS medium the greatest level of speech-expanding First Amendment protection.

A. The Common Carrier Model

Traditionally, common carrier doctrine has applied to entities that provide essential modes of communication to the public.[115] Today, telephone and telegraph services, as well as microwave and satellite communications services qualify as common carriers.[116] Title II of the Communications Act of 1934 regulates common carrier communications.[117] Section 3(h) of the Act requires that the Federal Communication Commission classify as a common carrier, any entity falling within the common carrier definition.[118] Section

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[115] Note, *After* NARUC I: *The FCC Communicates Its Intention to Abandon The Common Carrier/Private Carrier Distinction*, 6 U. MIAMI ENT. & SPORTS L. REV. 109, 109 (1989).

[116] Charles, *supra* note 37, at 131.

[117] 47 U.S.C. § 153 et. seq. (1988).

[118] 47 U.S.C. § 153(h) (1988).

3(h) defines a common carrier as "any person engaged as a common carrier for hire, in interstate or foreign communication by wire or radio. . . ."[119]

Recognizing the confusing circularity of this statutory definition, courts have developed a more instructive common law definition of common carrier.[120] Most recently, in 1976, the United States Court of Appeals for the District of Columbia articulated this definition in the twin cases of *National Association For Regulatory Utility Commissioners v. FCC* ("*NARUC I*" and "*NARUC II*").[121] *NARUC I* and *II* are recognized as the leading court cases discussing the meaning of common carriage.[122]

The *NARUC I* court defined a common carrier as an individual or organization that offers a service to the public for hire without discriminating among members of the public.[123] In so defining a common carrier, the *NARUC I* court stated that the *sine qua non* of common carrier status is a "quasi-public" character.[124] According to the court, such a quasi-public character arises out of a carrier's undertaking to carry for all people *indifferently*--or without regard to the identity of the customer or the content of the message.[125] As the court explained, it is this act of holding itself out to serve indiscriminately that distinguishes a common from a non-common, or private carrier.[126]

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[119] *Id.* Similarly, the Federal Communication Commission's regulations defines a common carrier as "any person engaged in rendering communication service for hire to the public." 47 C.F.R. § 21.1 (1988).

[120] *See, e.g.*, Semon v. Royal Indemnity Co., 279 F.2d 737, 739 (5th Cir. 1960); Home Ins. Co. v. Riddell, 252 F.2d 1, 3 (5th Cir. 1958); Ciaccic v. New Orleans Public Belt R.R., 282 F.Supp. 373, 375 (E.D.La. 1968).

[121] 525 F.2d 630, 641 (D.C. Cir.), *cert. denied*, 425 U.S. 992 (1976); 533 F.2d 601 (D.C. Cir. 1976).

[122] Angela J. Campbell, *Publish or Carriage: Approaches To Analyzing The First Amendment Rights of Telephone Companies*, 70 N.C. L. REV. 1073, 1124 (1992).

[123] *NARUC I*, 525 F.2d at 640-41.

[124] *Id.* at 641.

[125] *Id.* at 642.

The *NARUC I* court, however, explicitly noted that quasi-public status does not require that a carrier's services be available practically to the *entire* public.[127] Thus, the court explained, a carrier may be a common carrier even though its specialized service may be "of possible use to only a fraction of the total population."[128] Further, according to the court, to achieve common carrier status, it is not necessary that a carrier be *required* to serve indiscriminately by statute.[129] Rather, to be considered a common carrier, it is enough that the carrier's *practice* is to provide indifferent service to all its customers.[130]

The *NARUC II* court added a second common carrier prerequisite to the *NARUC I* definition.[131] This requirement is "that the system be such that customers 'transmit intelligence of their own design and choosing.'"[132] According to the court, a carrier satisfies this second requirement so long as the content of the transmission is under the customer's control.[133]

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[126] *Id*. at 641.

[127] *Id*. at 641.

[128] *Id*. at 641.

[129] *Id*. at 641.

[130] *Id*. at 641.

[131] *NARUC II*, 533 F.2d at 609.

[132] *Id*. at 609 (quoting Indus. Radiolocation Serv., 5 F.C.C.2d 197, 202 (1966) and Frontier Broadcasting Co. v. FCC, 24 F.C.C. 251 (1958)).

[133] *Id*. at 610.

As indicated by the *NARUC* cases, the fundamental characteristics of a common carrier is its non-discriminatory and non-controlling service with regard to message content. Thus, common carriers may not base decisions regarding message transmission on the basis of message content or sender identity. Nor may common carriers in any way control the content of the messages they transmit. Common carriers' legal liability reflects these limitations; in accordance with their lack of discretion and control, common carriers are held to a "knowing" standard of liability for transmitted messages. That is, like distributors, they are subject to liability only if they know or have reason to know of a message's harmful content.[134]

The rationale behind the knowing standard, as applied to common carriers, reveals itself in three policy interests promoting fairness and efficiency.[135] The first interest is in protecting the public's right to quick and continuous public communication service--a right that is jeopardized if a common carrier restricts messages for the fear of liability.[136] The second interest is in enabling the common carrier to provide communications to everyone who desires access.[137] This rationale implicitly recognizes the increased cost per user if the common carrier is forced to monitor and control transmissions to shield itself from message liability.[138] The third interest is in not punishing unfairly the carrier for carrying a message it neither controls nor endorses.[139] This rationale acknowledges that the common carrier is merely providing a "pipeline" or conduit to facilitate the flow of communications.[140]

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[134] Jensen, *supra* note 28, at 249-50. This standard of liability is a lower standard than that of the press or broadcaster, who is expected to oversee transmission content and may therefore be held responsible for the material therein. *Id*.

[135] Jensen, *supra* note 28, at 250.

[136] *Id*.

[137] *Id*.

[138] *Id*.

In sum then, there are two essential criteria for common carriers: (1) "holding out" the provision of service to the public on a nondiscriminatory basis, and (2) carriage of intelligence of the customer's choosing. Relatedly, there is essentially one prerequisite separating a common carrier from a private one: quasi-public status, evidenced by the provision of *indifferent* service to all whom desire it.[141] In exchange for this lack of content control and discretion, common carriers are held to a knowing standard of liability and are otherwise immune from responsibility for message content. The knowing standard of liability, in turn, protects the public's right to efficient common carrier service and insures common carrier access to everyone who desires it, while recognizing that the common carrier is merely acting as a conduit for the flow of information.

B. Application of Common Carrier Model to BBSs

As applied to both public and private computer bulletin board systems, the common carrier model reveals important similarities between BBSs and traditional common carriers. These similarities exist, such that, regardless of their public or private nature, both types of BBSs possess the requisite characteristics of common carrier status. Accordingly, there is a strong argument that the FCC should treat all BBSs like common carriers, released of any liability for messages posted on their boards.

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[139] *Id.*

[140] *Id.*

[141] *NARUC II*, 533 F.2d at 608-09.

Computer bulletin board systems appear to satisfy all characteristics of a common carrier. First, as already discussed, much like the telephone and other traditional common carriers, BBSs today serve as an essential and increasingly important mode of communication. Additionally, BBSs satisfy the two *NARUC* requirements of nondiscriminatory service and customer content control. As to the first requirement, there is no reason why BBSs cannot operate as "quasi-public" entities providing indifferent service to all who desire it. That computer bulletin boards are not available to everyone is not fatal to this analysis. As *NARUC I* indicates, it is not critical that a BBS provide service of use to the entire public to qualify as a common carrier. Rather, a BBS must merely offer indifferent service to whatever public its service may legally and practically be of use. Moreover, the "private" nature of systems like Prodigy does not preclude their achieving the "quasi-public" character needed for common carrier status. Under NARUC, the provision of *indifferent* service to all whom desire it, renders such private systems sufficiently "public" to classify as common carriers.

Computer bulletin board systems also satisfy the second prong of the *NARUC* test: carriage of intelligence of the customers own choosing. Satisfaction of this prong merely requires that a BBS permit its users to determine the content of their messages. Indeed, the whole premise of a computer bulletin board system is to provide an open forum for users to communicate their own thoughts; the content and form of these thoughts is left solely to the discretion of the user. Thus, BBSs clearly meet this second requirement.

Granting common carrier status to computer bulletin boards furthers all three policy interests fueling the rationale for the lower "knowing" standard. First, the knowing standard protects the public's right to quick and continuous communication over computer bulletin board systems by releasing BBS operators from the fear of liability. Guaranteeing this right to BBS participants is particularly important in light of the increasing popularity of these systems and their growing significance as a communication medium in the 21st century.

Second, holding BBS operators to a knowing standard better enables them to better provide communications to everyone who wishes to partake in the medium. If BBS operators do not have to pre-screen and monitor transmissions to protect themselves, the cost of running a system is likely to drop. These savings, in turn, can be passed on to BBS users. Such savings may eventually open up the medium to even more users.

Finally, the knowing standard recognizes that a BBS is merely acting as a conduit for speech and not endorsing the messages it transmits. To punish a BBS merely for delivering someone else's message--the contents of which are unknown--is unfair.

C. Implications For Free Speech

Common carrier treatment of computer bulletin board systems affords the greatest protection for BBS speech for several reasons. First and foremost, the common carrier solution protects the user's right to send messages by eliminating the possibility of prior restraints on speech. Under the common carrier model, BBS users can say whatever they want without running the risk of being silenced in advance of getting their message out. Of course, that BBS users have the right to say whatever they want, does not mean that they can do so with immunity. Clearly, freedom of speech principles do not protect *all* electronic speech any more than they protect *all* speech of other forms.

Beginning with *Chaplinsky v. New Hampshire,* the United States Supreme Court has recognized several categories of speech that are deserving of less or no protection under the First Amendment.[142] To date, some examples of these categories include "fighting words,"[143] defamatory speech,[144] advocacy of imminent lawless behavior,[145] commercial speech,[146] obscenity,[147] and child pornography.[148] Because of their lower status under the First Amendment, the Supreme Court has held these categories to be proscribable, actionable or subject to post facto penalty under certain circumstances. Thus, under the common carrier model, a *sender* of speech falling into one of these categories would still be subject to post facto punishment under appropriate civil or criminal statutes. This is no different than holding the author of a magazine article defaming a private person responsible for defamation.

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[142] 315 U.S. 568, 571-72 (1942).

[143] *Id.* at 572. Fighting words have one or the other of two characteristics. They are words "which by their very utterance inflict injury *or* tend to incite an immediate breach of the peace." *Id.* [emphasis added].

[144] Gertz v. Welch 418 U.S. 323 (1974); New York Times Co. v. Sullivan, 376 U.S. 254 (1964). Speech is defamatory if it causes injury to reputation. *See* HAIMAN, *supra* note 104, at 43.

[145] Brandenburg v. Ohio, 395 U.S. 444 (1969).

[146] Virginia Pharmacy Bd. v. Virginia Consumer Council, 425 U.S. 748 (1976).

[147] Miller v. California, 413 U.S. 15 (1973); Roth v. U.S., 354 U.S. 476 (1957). The Supreme Court has limited the coverage of laws against obscenity to "works which, taken as a whole, appeal to the prurient interest in sex, which portray sexual conduct in a patently offensive way, and which, taken as a whole, do not have serious literary, artistic, political, or scientific value." *Miller*, 413 U.S. at 24.

[148] New York v. Ferber, 458 U.S. 747 (1982).

The second reason the common carrier solution maximizes BBS speech is because it permits the First Amendment to work the way it should. That is, the uncensored environment of the common carrier model permits BBS users to respond to controversial speech with more speech.[149] In this way, the common carrier solution promotes the general principal that whenever possible, harmful speech must be fought by more expression, not by imposed silence.[150] Justice Brandeis articulated this view of the First Amendment's role in *Whitney v. California*: "If there be time to expose through discussion the falsehood and fallacies, to avert the evil by the processes of education, the remedy to be applied is more speech, not enforced silence. Only an emergency can justify repression."[151] The idea that more speech is the best solution to harmful speech holds especially true on computer bulletin board systems. Because of their low costs, ease of use and capacity to accommodate an almost infinite number of speakers at once, BBSs provide the perfect environment for counteractive speech.[152]

Notably, common carrier treatment also reserves to BBS operators considerable control over their systems. Under the common carrier model, BBS operators can manage their systems by segmenting boards according to interests and regulating the speech thereon, so long as they provide alternative boards to catch all ranges of speech. What is more, BBS operators can preserve their system "images" by alerting users to the type of speech found on each board.[153] Of course, should a BBS operator abuse its discretion for the purpose of covertly suppressing speech, then BBS users could likely appeal to the spirit of time, place and manner restrictions governing speech in public places.[154] Through time, place and manner analysis courts have defined the acceptable range of restrictions on speech in public places.[155] The reasoning in these cases would be easily applicable to the computer bulletin board forum.

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[149] Recall the "white corpuscle effect" on unregulated commercial BBSs. *See supra* note 84 and accompanying text.

[150] *See generally*, HAIMAN, *supra* note 104.

[151] Whitney v. California, 274 U.S. 357, 377 (1927).

[152] The only constraint on a BBS's capacity for speech is its upper limit of computer memory.

Finally, under the common carrier model, BBS users are spared unwanted exposure to messages they personally find offensive. Of course, the burden for avoiding such speech falls on the users themselves. The United States Supreme Court has long held that, when confronted by offensive but constitutionally protected speech, unwilling receivers have the burden to avoid further bombardment of their sensibilities.[156] Admittedly, in *FCC v. Pacifica Foundation*, the United States Supreme Court implicitly recognized that under certain "captive" circumstances--where the degree of captivity makes it impractical for the unwilling recipient of speech to avoid exposure--people deserve greater protection from the imposition of offensive, but otherwise protected speech.[157] Extending protection to computer bulletin boards systems, however, does not violate the *Pacifica* principle. As already noted, by charging subscription fees and issuing passwords, BBS operators can structure their systems to require affirmative choice of certain boards and to even block access to others. Thus, under such a structure, users are not "captive." Users can avoid exposure to offensive messages simply by not selecting them. What is more, users who object to the content of a particular board are not completely shut out; such users can find hundreds of other boards on which to articulate their ideas.

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[153] Indeed, operators can and do establish age restrictions for those boards covering more "adult" subjects.

[154] The Court has been asked to assess the constitutionality of a variety of regulations which do not overtly control the content of speech. Most of these regulations do not explicitly mention speech, but instead proscribe objectionable conduct. In assessing the validity of such regulations, the Court has been forced to consider restrictions on the "time, place, and manner" of communication. *See*, Cox v. New Hampshire, 312 U.S. 569 (1941).

[155] *See, e.g., id.*; Lovell v. Griffin, 303 U.S. 444 (1938) (state cannot require permits for public distribution of literature); Schneider v. State, 308 U.S. 147 (1939) (state interest in clean streets insufficient to justify ban on the distribution of literature on public streets); Saia v. New York, 334 U.S. 558 (1948) (blanket ban on the use of amplification devices without permission declared unconstitutional).

[156] Erznoznik v. Jacksonville, 422 U.S. 205, 209-10 (1975).

IV. Conclusion

Computer bulletin board systems must be taken seriously. While the ultimate impact of BBSs is impossible to project, current trends indicate tremendous and increasing public response to the medium. Already, these "last bastions of free swinging free speech,"[158] have established themselves as huge public forums for political debate and social exchange. It is certainly conceivable that in the next decade computer bulletin board systems may surpass in importance the printed press and the broadcast media.

Presently, in the absence of legislation, courts face the task of adapting legal traditions to this latest player in communication technology. If our society hopes to maintain robust communication of all ideas, the provision of maximum protection for BBS speech is imperative. To this end, the best solution is to treat underlying BBS networks as common carriers, operating under a content-neutral regime in which access is available to any entity that can pay for it. Like common carriers, BBSs should be seen as conduits for the distribution of electronic transmissions. They should not be allowed to change the content of a message or to discriminate among messages. In turn, they should be held to a "knowing standard" of liability and shielded from all responsibility for libelous, obscene, or criminal language.

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[157] 438 U.S. 726 (1978). *Pacifica* upheld a ban on indecent language even though it was per se protected. *Id*.

[158] Sanger & Quittner, *supra* note 16, at 5.

The common carrier model to regulating BBS speech is the best solution for several reasons: it guarantees BBS users the level of First Amendment protection they deserve; it allows the First Amendment to operate at its optimal level; it reserves to BBS operators the right to control their systems; and it protects BBS users from unwanted exposure to "offensive" speech. Most importantly, the common carrier solution preserves for society the incredible opportunity for democracy, self-government and free speech that computer bulletin board systems promise for the future.